

## PERMIT TO INSTALL

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### Common Abbreviations / Acronyms

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	BTU	British Thermal Unit
BACT	Best Available Control Technology	°C	Degrees Celsius
CAA	Clean Air Act	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
CO <sub>2</sub> e	Carbon Dioxide Equivalent	°F	Degrees Fahrenheit
COM	Continuous Opacity Monitoring	gr	Grains
EPA	Environmental Protection Agency	Hg	Mercury
EU	Emission Unit	hr	Hour
FG	Flexible Group	H <sub>2</sub> S	Hydrogen Sulfide
GACS	Gallon of Applied Coating Solids	hp	Horsepower
GC	General Condition	lb	Pound
GHGs	Greenhouse Gases	kW	Kilowatt
HAP	Hazardous Air Pollutant	m	Meter
HVLP	High Volume Low Pressure *	mg	Milligram
ID	Identification	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	ng	Nanogram
MAP	Malfunction Abatement Plan	NO <sub>x</sub>	Oxides of Nitrogen
MDEQ	Michigan Department of Environmental Quality (Department)	PM	Particulate Matter
MSDS	Material Safety Data Sheet	PM10	PM with aerodynamic diameter ≤10 microns
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	PM with aerodynamic diameter ≤ 2.5 microns
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	psia	Pounds per square inch absolute
PTI	Permit to Install	psig	Pounds per square inch gauge
RACT	Reasonably Available Control Technology	scf	Standard cubic feet
ROP	Renewable Operating Permit	sec	Seconds
SC	Special Condition	SO <sub>2</sub>	Sulfur Dioxide
SCR	Selective Catalytic Reduction	THC	Total Hydrocarbons
SRN	State Registration Number	tpy	Tons per year
TAC	Toxic Air Contaminant	µg	Microgram
TEQ	Toxicity Equivalence Quotient	VOC	Volatile Organic Compound
VE	Visible Emissions	yr	Year

\* For High Volume Low Pressure (HVLP) applicators, the pressure measured at the HVLP gun air cap shall not exceed ten (10) pounds per square inch gauge (psig).

### GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303. **(R 336.1301)**
  - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
  - b) A visible emission limit specified by an applicable federal new source performance standard.
  - c) A visible emission limit specified as a condition of this Permit to Install.
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

**SPECIAL CONDITIONS**

**EMISSION UNIT SUMMARY TABLE**

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU05-CRUDE-S1	Crude Unit. Area 5. The crude unit separates crude oil into various fractions through the use of distillation processes. These fractions are sent to other units in the refinery for further processing. The crude unit consists of process vessels (including heat exchangers and fractionation columns), the Alcorn heater, tanks, containers, compressors, pumps, piping, drains and various components (pump and compressors seals, process valves, pressure relief valves, flanges, connectors, etc.). Other EU's have been created to address individual pieces of equipment within the crude unit which have specific applicable requirements. Permit: 262-02	11/9/2005 11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU05-CRUDEHTR-S1	Crude Alcorn Heater, Area 5, Fuel: Refinery fuel gas, and Natural gas, Permit: 108-02, 262-02, 175-06	11/19/2005 11/5/2012	FGHEATERS-S1 FGCRUDE/VACHTRS-S1 FGDHOUPANNUAL-S1

Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU04-VACUUM-S1	Vacuum Unit. Area 4. The vacuum unit separates the reduced crude from the crude unit through the use of a vacuum column. The reduced crude is separated into light vacuum gas oil, medium vacuum gas oil, heavy vacuum gas oil, and a bottoms product called flux. The various fractions are sent to other units in the refinery for further processing. The vacuum unit consists of process vessels (including heat exchangers and vacuum column), process heater, tanks, containers, 2 cooling towers, flare, compressors, pumps, piping drains, and various components (pumps and compressor seals, process valves, pressure relief valves, flanges, connectors, etc.) Other EU's have been created to address individual pieces of equipment within the vacuum unit that have specific applicable requirements. Permit 262-02	11/9/2005 11/17/2010	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU04-VACHTR-S1	Vacuum Heater. Area 4. Fuel: Refinery fuel gas and natural gas. Permit: 108-02, 262-02, 175-06	11/09/2005 11/5/2012	FGHEATERS-S1 FGCRUDE/VACHTRS-S1 FGDHOUPANNUAL-S1
EU04-VAC2HTR-S1	Vacuum Heater. Area 4. Fuel: Refinery fuel gas and natural gas.	11/5/2012	FGHEATERS-S1 FGDHOUPANNUAL-S1
EU08-GOHT-S1	Gas Oil Hydrotreater Unit: Area 8. Reacts sour gas oil streams with hydrogen over a catalyst bed to remove sulfur. The GOHT unit consists of process vessels (reactors, distillation tower, absorbing towers, stripper tower) and a charge heater, cooling tower, flare, compressors, pumps, piping, drains, & various components (pumps & compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). Other EU's were created to address individual pieces of equipment within this unit that have specific applicable requirements. Permit: 262-02	11/9/200511/5/ 2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU08-GOHTCHARHTR-S1	Gas Oil Hydrotreater Charge Heater. Area 8. Fuel: Refinery fuel gas and natural gas. Permit: 262-02	11/9/2005	FGHEATERS-S1 FGDHOUPANNUAL-S1

Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU09-ALKYDIBREBHTR-S1	Alkylation Deisobutanizer Heater, Area 9, Fuel: Refinery fuel gas, and Natural gas, Permit: 63-08B	11/5/2012	FGHEATERS-S1 FGDHOUPANNUAL-S1
EU09-ALKYLATION-S1	Alkylation Unit: Area 9: The Alkylation unit reacts isobutane with olefins in the presence of sulfuric acid to produce alkylate, a high octane gasoline blending component. Reaction products are sent for further processing and separation in the fractionating section. Products from the unit include off-gas, alkylate, butane, isobutane, and propane. Off-gas is routed to the refinery fuel gas system. Alkylate, butane, and propane are directed to storage. Isobutane is recycled through the system for further processing. Alkylation unit consists of process vessels (including fractionators, reactor and caustic scrubber), heaters, tanks, containers, cooling tower, flare, compressors, pumps, piping, drains, and various components (pump and compressor seals, process valves, pressure relief valves, flanges, connectors, etc.) Other EU's were created to address individual pieces of equipment within the Alkylation Unit which have specific applicable requirements. Permit 262-02	1/1/1959 11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1

Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU11-FCCU-S1	Fluid Catalytic Cracking Unit. Area 11. The FCCU converts heavier hydrocarbons to lighter products in the presence of a catalyst. In the process coke is deposited on the catalyst. The spent catalyst is moved to the regenerator (11-V1) where the coke is burned off using air. The regenerator is equipped with cyclones and ESPs to capture catalyst (11-V1CYCLONES). The hot flue gas from the regenerator is directed to a flue gas cooler where heat is recovered as steam. The FCCU consists of process vessels (reactors, regenerator, fractionators, knock-out pots, and strippers) heater, tanks, containers, 2 cooling towers, compressors, pumps, piping, drains, and various components (pumps, and compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). Other EUs have been created to address equipment that has specific applicable requirements. Permit 262-02, 28-02A, 175-06	11/9/2005 11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU12-GASCON-S1	Gas Concentration Unit. Area 12. The Gas Con Unit processes liquids and off-gases from the FCCU main column overhead and various other hydrocarbons (liquid and gas) and produces gasoline and liquid petroleum gas. The Gas Con Unit consists of process vessels (including reboilers, condensers, exchangers, absorbers, and distillation columns) tanks, containers, compressors, pumps, piping, drains, and various components, (pump and compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). Other EU's have been created to address individual pieces of equipment with the Gas Concentration Unit that have specific applicable requirements. Permit 262-02	11/9/2005 11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1



Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU16-NAPHHYTREAT-S1	Naphtha Hydrotreater Unit – Area 16. The NHT unit uses hydrogen to remove sulfur and nitrogen from straight-run naphthas. The process uses a catalyst to promote the desulfurization reaction. The desulfurized or sweet naphtha is blended into gasoline or used for platformer feed. The NHT unit consists of process vessels (including exchangers, reactors, receivers, separators, and a stripper column.) heaters, tanks, containers, pumps, piping, drains, and various components, (pump seals, process valves, pressure relief valves, flanges, connectors, etc. Other EU's have been created to address individual pieces of equipment which have specific applicable requirements. Permit 262-02	01/01/1962 11/17/2010	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU16-NHTSTRIPREBOIL-S1	Naphtha Hydrotreater Stripper Reboiler. Area 16. Fuel: Refinery fuel gas, and natural gas. Permits: C-11495, 108-02, 262-02	11/09/2005	FGHEATERS-S1 FGDHOUPANNUAL-S1
EU16-NHTCHARHTR-S1	Naphtha Hydrotreater Charge Heater. Area 16. Fuel: refinery fuel gas and natural gas. Permit: C-11493, 108-02, 262-02	11/09/2005	FGHEATERS-S1 FGDHOUPANNUAL-S1
EU19-KEROHYTREAT-S1	Kerosene Hydrotreater Unit. Area 19. The KHT unit uses hydrogen to remove sulfur and nitrogen from kerosene (and occasionally Naphtha). The process, called hydrotreating, uses a cobalt and molybdenum catalyst with hydrogen and temperature to promote the desulfurization reactor. The KHT unit consists of process vessels (including exchangers, a reactor, a receiver, separators, and a stripper column), a heater, tanks, containers, pumps, compressors, piping, drains, and various components (pump, and compressors, seals, process valves, pressure relief valves, flanges, connectors, etc.). Another EU have been created to address the charge heater, which has specific applicable requirements. Permit 262-02	11/9/2005 6/16/2011	FGPROCUNITS-S1 FGDHOUPANNUAL-S1

Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU19-KHTCHARHTR-S1	Kerosene Hydrotreater Charge Heater. Area 19. Fuel: Refinery fuel gas, and natural gas. Permits C-11494, 108-02, 262-02	11/9/2005	FGHEATERS-S1 FGDHOUPANNUAL-S1
EU22-TANKFARMS-S1	Tank Farm, Area 22. This emission group covers the three tanks farm areas. Permit 262-02	11/9/2005 11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU27-ZURNBOILER-S1	Zurn Boiler. Area 27. Capacity: 210 MMBTU/hr. Fuel: Natural gas, Permit: C-9022	5/20/1991	FGHEATERS-S1 FGDHOUPANNUAL-S1
EU27-B&WBOILER1-S1	Gas-fired boiler, Area 27. Fuel: Refinery fuel gas and natural gas. Permit 67-02	11/01/2003 11/5/2012	FGHEATERS-S1 FGDHOUPANNUAL-S1
EU70-COKER-S1	Delayed Coker. Area 70. The Coker converts Vacuum Resid (Crude Vacuum Tower Bottoms), a product normally sold as asphalt or blended into residual fuel oil, into lighter, more valuable products. The Vacuum Resid feedstock is heated before it enters the main fractionator, where lighter material vaporizes. The fractionator bottoms are routed through a fired heater and then into a coke drum. This emission unit consists of process vessels (fractionators), coke drums, heater, cooling tower, compressors, pumps, piping, drains, & various components (pumps & compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). This emission group includes the Coke Handling System, which will collect, size, and transport the petroleum coke created during the coking process. This system consists of a coke pit, storage pad, enclosed crusher, enclosed conveyors, and surge bins. Other EU's were created to address individual pieces of equipment within this unit that have specific applicable requirements.	11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU70-COKERHTR-S1	Coker Charge Heater. Area 70. Fuel: Refinery fuel gas and natural gas.	11/5/2012	FGHEATERS-S1 FGDHOUPANNUAL-S1
EU71-H2HTR-S1	Hydrogen Plant Heater. Area 71. Fuel: Refinery fuel gas, pressure swing absorption gas, Syngas, and natural gas.	11/5/2012	FGHEATERS-S1 FGDHOUPANNUAL-S1

Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU71-H2PLANT-S1	Hydrogen Plant. Area 71. The H2 Plant will process natural gas, refinery fuel gas and/or a high-pentane refinery stream to produce 99.9% pure hydrogen and high-pressure steam through the use of a steam/methane reforming technology. This emission unit consists of process vessels, heater, compressors, pumps, piping, drains, & various components (pumps & compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). Other EU's were created to address individual pieces of equipment within this unit that have specific applicable requirements.	11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU71-H2STEAMSYS-S1	Hydrogen Plant Deaerator, Blowdown Vent, and Steam Vent. Area 71. During normal operation, small quantities of VOC may be emitted from the Hydrogen Plant Deaerator and the Blowdown Vent. During periods of startup, shutdown, and unanticipated outages, small quantities of VOC may be emitted from the Hydrogen Plant Deaerator, Blowdown Vent, and Steam Vent.	11/5/2012	FGDHOUPANNUAL-S1
EU-COKERFLARE-S1	Coker Plant Flare. Area 76.	11/5/2012	FGFLARES-S1 FGDHOUPANNUAL-S1
EU77-DHHTHTREAT-S1	Distillate Hydrotreater Unit: Area 77. Reacts sour distillate (and occasionally gas oil) streams with hydrogen over a catalyst bed to remove sulfur. The DHT unit consists of process vessels (reactors, distillation tower, absorbing towers, stripper tower), heater, cooling tower, compressors, pumps, piping, drains, & various components (pumps & compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). Other EU's were created to address individual pieces of equipment within this unit that have specific applicable requirements.	11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU77-DHTHTR-S1	Distillate Hydrotreater Heater. Area 77. Fuel: Refinery fuel gas and natural gas.	11/5/2012	FGHEATERS-S1 FGDHOUPANNUAL-S1

Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EU72-SULRBLOCK2-S1	Sulfur Block 2. Area 72. The Sulfur Block removes hydrogen sulfide from acid gas and converts it to elemental sulfur using Claus Process (Trains A and B), the SCOT Tail Gas Treating Unit process (Trains No. 1 and No. 2), and associated amine treating equipment. The exhaust tail gas is routed to a thermal oxidizer. This emission group consists of process vessels (including thermal reactors, an absorbing tower, and a stripping tower), heaters, tanks, containers, compressors, seals, process valves, flanges, connectors, etc.). Other EU's have been created to address individual units which have specific applicable requirements.	11/5/2012	FGPROCUNITS-S1 FGDHOU PANNUAL-S1
EU73-SOURWATER2-S1	Sour Water Stripper. Area 73. The Sour Water Stripper removes hydrogen sulfide (H <sub>2</sub> S) and ammonia from the sour water stream in distillation towers heated by steam. The acid gases from the tower are routed to the Sulfur Plant. The stripped sour water is sent to the refinery sewer system. This emission group includes all equipment (pumps, tanks, vessels) in this area.	11/5/2012	FGPROCUNITS-S1 FGDHOU PANNUAL-S1
EUTANK104-S1	Tank 104, an internal floating roof tank for the storage of heavy petroleum liquids with a true vapor pressure of 11 psia or less. Capacity = 4,673,550 gallons. Permit 262-02, 388-07	1/1/1952 11/3/2011	FGGROUP2-S1 FGNAPHTHATANKS-S1 FGIFRTANKS-S1 FGHOUP TANKS-S1 FGDHOU PANNUAL-S1
EUTANK120-S1	Tank 120, an internal floating roof tank for the storage of heavy petroleum liquids with a true vapor pressure of 1.5 psia or less. Capacity = 4,743,900 gallons. Permit 262-02	1/1/1964 4/19/2012	FGGROUP2-S1 FGNAPHTHATANKS-S1 FGIFRTANKS-S1 FGHOUP TANKS-S1 FGDHOU PANNUAL-S1
EUTANK601-S1	Tank 601, an external floating roof tank for the storage of wastewater. Capacity = 4,200,000 gallons.	11/5/2012	FGEFRTANKS-S1 FGHOUP TANKS-S1 FGDHOU PANNUAL-S1
EUTANK216-S1	Tank 216, an internal floating roof tank for the storage of sour water from EU72-SULRBLOCK2-S1. Capacity = 1,500,000 gallons.	11/5/2012	FGIFRTANKS-S1 FGHOUP TANKS-S1 FGDHOU PANNUAL-S1

Emission Unit ID	Emission Unit Description* (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUCOOLTOWERA-S1	Cooling tower A	11/5/2012	FGCOOLTOWERS-S1 FGDHOUPANNUAL-S1
EUCOOLTOWERC-S1	Cooling tower C	11/5/2012	FGCOOLTOWERS-S1 FGDHOUPANNUAL-S1
EUCOOLTOWERD-S1	Cooling tower D	11/5/2012	FGCOOLTOWERS-S1 FGDHOUPANNUAL-S1
EUCOOLTOWERE-S1	Cooling tower E	11/5/2012	FGCOOLTOWERS-S1 FGDHOUPANNUAL-S1
EUCOOLTOWERF-S1	Cooling tower F	11/5/2012	FGCOOLTOWERS-S1 FGDHOUPANNUAL-S1
EUCOOLTOWERG-S1	Cooling tower G	11/5/2012	FGCOOLTOWERS-S1 FGDHOUPANNUAL-S1
EUCOOLTOWERH-S1	Cooling tower H	11/5/2012	FGCOOLTOWERS-S1 FGDHOUPANNUAL-S1
EUCOOLTOWERNEW-S1	New cooling tower installed as part of the heavy oil upgrade project.	11/5/2012	FGCOOLTOWERS-S1 FGDHOUPANNUAL-S1
EU76-UTILITIES-S1	Coker plant flare and flare gas recovery systems. Area 76.	11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
EU78-FUELGASRECOVERY-S1	Fuel gas recovery compressor. Area 78.	11/5/2012	FGPROCUNITS-S1 FGDHOUPANNUAL-S1
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290. * Emission units and emission groups that appear in this permit that are not listed in the emission unit identification tables in this permit are described in the renewable operating permit for the facility.			

These conditions include the following two existing Emission Groups for completeness. Some equipment covered by this Permit to Install (PTI) belongs in these groups, but was not modified by the Detroit HOUP, nor were their conditions changed in this PTI.

Emission Unit ID	Emission Unit Description	Stack Identification
EU-NSPSQQQ-S1	All individual drain systems, oil-water separators and the aggregate facilities that are subject to 40 CFR 60, Subpart QQQ. A current list of subject items is maintained by the refinery.	None
EU-BENZNESHAP-S1	All equipment at the facility subject to the requirements of the Benzene Waste NESHAP	None

**The following conditions apply to: EU11-FCCU-S1**

**DESCRIPTION:** Fluid Catalytic Cracking Unit. Area 11. The FCCU converts heavier hydrocarbons to lighter products in the presence of a catalyst. In the process coke is deposited on the catalyst. The spent catalyst is moved to the regenerator (11-V1) where the coke is burned off using air. The regenerator is equipped with cyclones to capture catalyst (11-V1CYCLONES). The hot flue gas from the regenerator is directed to a flue gas cooler where heat is recovered as steam. Before exiting the stack, the flue gas passes through Electrostatic Precipitators (ESPs). The FCCU consists of process vessels (reactor, regenerator, fractionators, knock-out pots, and strippers) heater, tanks, containers, 2 cooling towers, compressors, pumps, piping, drains, and various components (pumps, and compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). Other EUs have been created to address equipment that has specific applicable requirements. Permit 28-02A, 262-02, 175-06, 379-08

**Flexible Group ID:** FGPROCUNITS-S1, FGDHOUANNUAL-S1

**POLLUTION CONTROL EQUIPMENT:** Cyclone, Electrostatic Precipitator (ESP), Ammonia Injection

**I. EMISSION LIMIT(S)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Particulate Matter	0.8 pounds per thousand pounds of coke burn off in the regenerator <sup>2*</sup>	3 hour rolling average basis	EU11-FCCU-S1	SC V1, VI4,VI5	40 CFR 60.102(a)(1), 40 CFR 63.1564
2. PM10	1.1 pounds per thousand pounds of coke burn off in the regenerator	3 hour rolling average basis	EU11-FCCU-S1	SC V1, VI4,VI5	R 336.1205, R 336.2802, 40 CFR 52.21
3. Carbon Monoxide	500 ppmv <sup>2</sup>	1-hour block average, dry gas basis and 0% oxygen	EU11-FCCU-S1	SC VI2, VI7	R 336.2810(3), R 336.2804, 40 CFR 52.21(d), 40 CFR 60.103, 40 CFR 63.1565
4. Sulfur Dioxide	50 ppmv <sup>2</sup>	Based upon 7 day rolling average, dry gas basis and 0% oxygen	EU11-FCCU-S1	SC VI2,VI6,	R 336.2802, 40 CFR 52.21, 55 FR 11029, 40 CFR 60.102a(b)(3), Consent Order No. 01-40119
5. Sulfur Dioxide	25 ppmv <sup>2</sup>	Based upon 365 day rolling average, dry gas basis and 0% oxygen	EU11-FCCU-S1	SC VI2, VI6	R 336.2802, 40 CFR 52.21, 55 FR 11029, 40 CFR 60.102a(b)(3), Consent Order No. 01-40119
6. NOx	80 ppmv <sup>2</sup>	Based upon 7 day rolling average, dry gas basis and 0% oxygen	EU11-FCCU-S1	SC VI2, VI8	R 336.1801, 40 CFR 52.21, 55 FR 11029, 40 CFR 60.102a(b)(2), Consent Order No. 01-40119

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
7. NOx	70 ppmv <sup>2</sup>	Based upon 365 day rolling average, dry gas basis and 0% oxygen	EU11-FCCU-S1	SC VI2, VI8	R 336.1801, 40 CFR 52.21, 55 FR 11029, Consent Order No. 01-40119
8. Volatile Organic Compounds	21 Tons/yr <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU11-FCCU-S1	SC V2, VI9	R 336.1702(a)

\* Compliance with this limit shall be considered compliance with the limits of 40 CFR 60.102(a)(1) which have been subsumed under this streamlined requirement.

## II. MATERIAL LIMIT(S)

NA

## III. PROCESS/OPERATIONAL RESTRICTION(S)

- The permittee shall not operate EU11-FCCU-S1 unless the electrostatic precipitator is installed, maintained, and operated in a satisfactory manner. Satisfactory operation is described in the Startup, Shutdown and Malfunction Plan. **(40 CFR Part 63 Subparts A & UUU, R 336.1910)**
- The permittee shall install a permanent ammonia injection system to reduce emissions of particulate matter and oxides of nitrogen from the FCCU.<sup>3</sup> **(R 336.1201(3), R 336.1910)**
- The permittee shall not inject ammonia into the EU11-FCCU-S1 exhaust unless an operation plan for ammonia injection (NH3 Injection Plan) is implemented and maintained, and is amended based on stack test results and operational experience. At a minimum, the NH3 Injection Plan shall address all the issues listed below. The permittee shall also amend the interim NH3 Injection Plan within 45 days if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the NH3 Injection Plan and any amendments to the NH3 Injection Plan to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the NH3 Injection Plan or amended NH3 Injection Plan shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1901, R 336.1910, R 336.1213(3))**
  - Ammonia emissions from EU11-FCCU-S1 due to ammonia injection.
  - Operational practices that interact with ammonia injection to increase PM emissions.
  - Establishing operating parameters that ensure compliance with all emission limits for EU11-FCCU-S1 under all normal operating scenarios.
  - Identifying how the operating parameters established according to condition III.2.c will be monitored, at what frequency, and how the data will be recorded.
  - Maintenance practices required to ensure that the ammonia injection operates in a satisfactory manner.
  - Emission limitations for particulate matter, oxides of nitrogen, and ammonia slip.<sup>3</sup>
- The permittee shall conduct all necessary maintenance, consistent with the NH3 Injection Plan, to keep all components of the ammonia injection system operating in a satisfactory manner at all times. **(R 336.1901, R 336.1910)**
- The three hour rolling average total power and secondary current to the entire system must not fall below the level established during the most recent performance test. **(R336.1910, 40 CFR 60.102a(c)(1)(i))**

6. The daily average exhaust coke burn-off rate must not exceed the level established during the most recent performance test. **(R336.1910, 40 CFR 60.102a(c)(1(ii))**

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within 180 days after commencement of trial operation of the Detroit heavy oil upgrade project, and thereafter annually, the permittee shall verify emission rates from EU11-FCCU-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. For verification of PM emissions, USEPA Method 5B or 5F shall be used. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM-10 **(R 336.1205), (R 336.2802, 40 CFR 52.21)**  
PM **(R 336.1205), (40 CFR 60.102(a)(1), 40 CFR 63.1564, 60 CFR Part 63 Subpart UUU)**  
VOC<sup>3</sup> **(R 336.1201(3))**  
Sulfuric acid mist (For verification of sulfuric acid mist emissions, testing shall use the controlled condensation method.)<sup>3</sup> **(R 336.1201(3))**
2. Within 180 days after commencement of trial operation of the Detroit heavy oil upgrade project, and at least once every five years thereafter, the permittee shall determine the VOC emission rates from EU11-FCCU-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Determination of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. Test results shall be used to calculate emissions for compliance with I.8. **(R 336.1702, R 336.2001, R 336.2003, R 336.2004)**

**See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of opacity from EU11-FCCU-S1. **(R 336.2103(1), 40 CFR 60.105(a)(1), Paragraph 16 of Consent Decree 01-40119, 40 CFR 63 Subparts A & UUU)**
2. The permittee shall install, calibrate, maintain, and operate CEMS for measuring NO<sub>x</sub>, CO, CO<sub>2</sub>, SO<sub>2</sub>, and Oxygen from EU11-FCCU-S1 on a continuous basis. The permittee shall install, certify, calibrate, maintain, and operate the CEMS in accordance with the requirements of 40 CFR §§60.11, 60.13, and Part 60, Appendix A, the applicable performance specification test of 40 CFR Part 60 Appendices B and F. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report. **(R 336.1213(3), 40 CFR Part 60 Subpart Ja)**
3. The permittee shall keep records of the process unit charge rate on a daily basis for EU11-FCCU-S1. **(R 336.1213(3), R 336.1331(1)(e))**
4. The permittee shall keep records of average coke burn off rate in 1000 pounds per hour on a daily basis for EU11-FCCU-S1. **(40 CFR Part 60 Subparts A & J/Ja, 40 CFR Part 63 Subparts A and UUU)**



5. The permittee shall keep records of hours of operation on a daily basis for EU11-FCCU-S1. **(40 CFR Part 60 Subparts A & J/Ja, 40 CFR Part 63 Subparts A and UUU)**
6. The permittee shall keep records of SO<sub>2</sub> emissions on a continuous basis from the CEM for EU11-FCCU-S1. **(40 CFR Part 60 Subparts A & J/Ja)**
7. The permittee shall keep records of CO emissions on a continuous basis from the CEM for EU11-FCCU-S1. **(40 CFR Part 60 Subparts A & J/Ja, 40 CFR Part 63 Subparts A and UUU)**
8. The permittee shall keep records of NO<sub>x</sub> emissions on a continuous basis from the CEM for EU11-FCCU-S1. **(R 336.1205, R 338.2802, 40 CFR 52.21, 55 FR 11029, 40 CFR Part 60 Subparts A & Ja, Consent Order No. 01-40119)**
9. The permittee shall calculate the VOC emission rates from EU11-FCCU-S1 for each calendar month and 12-month rolling time period, using a method acceptable to the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1702(a))**
10. The permittee shall calculate the PM and PM<sub>10</sub> emission rates from EU11-FCCU-S1 per 1,000lb of coke burn off using a method acceptable to the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR Part 60 Subparts A & J/Ja, 40 CFR Part 63 Subparts A and UUU)**
11. The permittee shall keep, in a satisfactory manner, the following records on a monthly basis for bypass lines in EU11-FCCU-S1:
  - a. visually inspect the seal or closure mechanism
  - b. is the bypass line maintained in the closed position?
  - c. is flow present in the bypass line?**(40 CFR Part 63 Subparts A & UUU)**
12. The permittee shall monitor and record, in a satisfactory manner, the operating parameters identified in the approved NH<sub>3</sub> Injection plan on the frequency described in the approved plan. **(R 336.1901, R 336.1910)**
13. The permittee shall use continuous parameter monitor systems to measure and record the hourly average total power input and secondary voltage to the entire system. **(R336.1910, 40 CFR 60.105a(b)(1)(i))**

## **VII. REPORTING**

NA

See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

## **VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1.SVFCCU	60 <sup>2</sup>	195 <sup>2</sup>	R 336.1225, R 336.1226(d), R 336.2804, 40 CFR 52.21(d)

**IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and J/Ja, as they apply to EU11-FCCU-S1. **(40 CFR Part 60 Subparts A & J/Ja)**
2. Each owner or operator required to install a continuous monitoring device shall submit excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or summary report form (see 40CFR 60.7 (d)) to the Department semiannually, except when: more frequent reporting is specifically required by an applicable subpart; or the Department, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. All reports shall be postmarked by the 30th day following the end of each six-month period. Written reports of excess emissions shall include the following information: **(40 CFR 60.7c)**
  - a. The magnitude of excess emissions computed in accordance with Sec. 60.13(h), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.
  - b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.
  - c. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.
  - d. When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted such information shall be stated in the report.
3. Permittee shall comply with all applicable reporting requirements in 40 CFR 60.7. **(40 CFR 60.7)**
4. Permittee shall maintain a file of all information reported in the semi-annual reports and all other data collected, either by continuous monitoring system or as necessary to convert monitoring data to the units of the applicable standard, for a minimum of five years from the date of collection of such data or submission of such reports. **(R 336.1213(3)(b)(ii))**
5. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and UUU, as they apply to EU11-FCCU-S1. **(40 CFR Part 63 Subparts A and UUU)**
6. The permittee shall not operate EU11-FCCU-S1 unless an approved Start up, Shutdown, Malfunction Plan (SSMP), or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall include procedures for maintaining and operating in a satisfactory manner, EU11-FCCU-S1, add-on air pollution control device, or monitoring equipment during malfunction events, and a program for corrective action for such events. If the SSMP fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the malfunction abatement plan within 45 days after such an event occurs. **(40 CFR Part 63 Subparts A and UUU)**
7. Along with the Notification of Compliance Status report, the permittee shall submit to the AQD District Supervisor, an approvable Operation, Maintenance and Monitoring plan (OMMP). The permittee shall not operate EU11-FCCU-S1 unless the approved OMMP, or an alternate plan approved by the AQD District Supervisor, is implemented. The plan shall contain all information required by 40 CFR 63.1564(a)(3). **(40 CFR Part 63 Subparts A & UUU)**

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup>This condition is included at the request of the permittee.

**The following conditions apply to: EU27-ZURNBOILER-S1**

**DESCRIPTION:** Zurn Boiler. Area 27. Capacity: 210 MMBTU/hr. Fuel: Natural gas, Permit: C-9022

**Flexible Group ID:** FGHEATERS-S1, FGDHOUPANNUAL-S1

**POLLUTION CONTROL EQUIPMENT:** Multi-staged Low NOx Burner

**I. EMISSION LIMIT(S)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NO <sub>x</sub>	0.20 lb/MMBTU <sup>2</sup>	Annual rolling average as determined at the end of each calendar month	EU27- ZURNBOILER	SC VI.1	40 CFR 60.44b
2. CO	0.10 lb/MMBTU <sup>2</sup>	Annual rolling average as determined at the end of each calendar month	EU27- ZURNBOILER	SC VI.2	R 336.1201(3)
3. PM	0.0019 lb/MMBTU <sup>2</sup>	Three-hour average	EU27- ZURNBOILER	SC V.2	R 336.1205, R 336.2802, 40 CFR 52.21
4. PM-10	0.0076 lb/MMBTU <sup>2</sup>	Three-hour average	EU27- ZURNBOILER	SC V.1	R 336.1205, R 336.2802, 40 CFR 52.21
5. VOC	0.0055 lb/MMBTU <sup>2</sup>	Three-hour average	EU27- ZURNBOILER	SC V.4	R 336.1205, R 336.1702(a)

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Natural Gas	210,000 cubic feet per hour based on 1,000 BTU/cubic foot <sup>2</sup>	Hourly	EU27- ZURNBOILER-S1	SC VI.5	R 336.1205, R 336.2802, 40 CFR 52.21

2. The permittee shall only burn natural gas as fuel for EU27-ZURNBOILER-S1.<sup>2</sup> (R 336.1205, R 336.1224, R 336.1225, R 336.2802, 40 CFR 52.21, 40 CFR Part 60 Subparts A & Db)

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

NA

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The heat input for EU27-ZURNBOILER-S1 shall not 210 MM Btu per hour on a daily average.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
2. The permittee shall not operate EU27-ZURNBOILER-S1 unless the multi-staged low NOx burners are installed and operating properly.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR 60.44b)**

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify PM-10 emission rates from EU27-ZURNBOILER-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For a test conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions.<sup>2</sup> **(R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804, 40 CFR 52.21(c)&(d))**
2. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify PM emission rates from EU27-ZURNBOILER-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For a test conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>2</sup> **(R 336.1205, R 336.2001, R 336.2003, R 336.2004)**
3. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and annually thereafter, the permittee shall verify PM emission rates from EU27-ZURNBOILER-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For a test conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>3</sup> **(R 336.1201(3))**
4. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify VOC emission rates from EU27-ZURNBOILER-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For a test conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>2</sup> **(R 336.1205, R 336.1702, R 336.2001, R 336.2003, R 336.2004)**

5. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and annually thereafter, the permittee shall verify VOC emission rates from EU27-ZURNBOILER-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For a test conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. <sup>3</sup> **(R 336.1201(3))**
6. For tests required by SC V.1 through 5, the following applies for valid, regularly scheduled tests, conducted during normal operations: <sup>3</sup> **(R 336.1201(3))**
  - a. If a test indicates non-compliance with a permitted emission rate, and the test is required to be conducted on either a three or five year cycle, the frequency of such tests shall be annual for two consecutive years. Following two consecutive years of compliance, the frequency of testing shall return to the original three or five year cycle.

**See Appendix 5-S1 of Renewable Operating Permit MI-ROPA9831-2012a**

## **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the NO<sub>x</sub> and oxygen emissions from EU27-ZURNBOILER-S1 on a continuous basis. The permittee shall install and operate the Continuous Emission Monitoring System (CEMS) in accordance with the requirements of 40 CFR §§60.11, 60.13, and Part 60, Appendix A, the applicable performance specification test of 40 CFR Part 60 Appendices B and F. With respect to 40 CFR Part 60 Appendix F, in lieu of the requirements of 40 CFR Part 60 Appendix F §§5.1.1, 5.1.3, and 5.1.4, the permittee shall conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) once every twelve (12) calendar quarters, provided that a Cylinder Gas Audit is conducted each calendar quarter. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report. <sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR Part 60 Subparts A and Db, 40 CFR 60.48b)**
2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the CO and oxygen emissions from EU27-ZURNBOILER-S1 on a continuous basis. The permittee shall install and operate the CEMS in accordance with the requirements of 40 CFR §§60.11, 60.13, and Part 60, Appendix A, the applicable performance specification test of 40 CFR Part 60 Appendices B and F. With respect to 40 CFR Part 60 Appendix F, in lieu of the requirements of 40 CFR Part 60 Appendix F §§5.1.1, 5.1.3, and 5.1.4, the permittee shall conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) once every twelve (12) calendar quarters, provided that a Cylinder Gas Audit is conducted each calendar quarter. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report. <sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21)**
3. The permittee shall monitor emissions and operating information for EU27-ZURNBOILER-S1 in accordance with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Db. <sup>2</sup> **(R 336.1205, 40 CFR Part 60 Subparts A & Db)**
4. The permittee shall keep records of emissions and operating information to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Db. The permittee shall keep all source emissions data and operating information on file at the facility and make them available to the Department upon request. <sup>2</sup> **(R 336.1205, 40 CFR Part 60 Subparts A & Db)**
5. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the natural gas rate in EU27-ZURNBOILER-S1 on an hourly basis. Each day, the permittee shall determine the heat input rate to EU27-ZURNBOILER-S1 for the previous operating day. <sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21)**

**VII. REPORTING**

NA

**See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV22-BR7	72 <sup>1</sup>	150 <sup>1</sup>	R 336.1225

**IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all applicable provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subpart A-General Provisions, Subpart Db-Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units as they apply to EU27-ZURNBOILER-S1.<sup>2</sup> **(40 CFR Part 60 Subparts A and Db)**

**Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup> This condition is included at the request of the permittee.

**The following conditions apply to: EU27-B&WBOILER1-S1**

**DESCRIPTION:** Gas-fired boiler, capacity: 220,000 pounds steam per hour at 600 psig; design heat input not to exceed 300 MMBtu/hr. Fuel: Refinery fuel gas and natural gas

**Flexible Group ID:** FGHEATERS-S1, FGDHOUPANNUAL-S1

**POLLUTION CONTROL EQUIPMENT:** Low NOx Burner, Flue Gas Recirculation system

**I. EMISSION LIMITS**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NOx	0.20 pounds per million BTUs heat input <sup>2</sup>	Based upon a 24-hour calendar day average	EU27-B&WBOILER1 -S1	SC VI1	R 336.2802, 40 CFR 52.21, 40 CFR 60 Subpart Db
2. NOx	0.07 pounds per million BTUs heat input <sup>3</sup>	Based upon an annual rolling average, as determined at the end of each calendar month	EU27-B&WBOILER1 -S1	SC VI.1	R 336.1201(3)
3. CO	0.04 pounds per million BTUs heat input <sup>3</sup>	Based upon an annual rolling average, as determined at the end of each calendar month	EU27-B&WBOILER1 -S1	SC VI.2	R 336.1201(3)
4. PM-10	0.0076 pounds per million BTUs heat input <sup>2</sup>	Based upon a three- hour average	EU27-B&WBOILER1 -S1	SC V1	R 336.1205
5. PM	0.0019 pounds per million BTUs heat input <sup>2</sup>	Based upon a three-hour average	EU27-B&WBOILER1 -S1	SC V1	R 336.1205
6. VOC	0.0055 pounds per million BTUs heat input <sup>2</sup>	Based upon a three-hour rolling average	EU27-B&WBOILER1 -S1	SC V.2	R 336.1205, R 336.1702(a)

## II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Natural Gas or Refinery Fuel Gas	300,000 cubic feet per hour based on 1000 BTU/cubic Foot <sup>2</sup>	Hourly	EU27-B&WBOILER1-S1	SC VI5	R 336.1801, 40 CFR Part 60 Subpart Db
2. H2S Content in Refinery Fuel Gas	160 ppmv <sup>2*</sup>	Three hour rolling average	EU27-B&WBOILER1-S1	SC VI3	40 CFR 60.102a(g)(1)(i)
3. H2S Content in Refinery Fuel Gas	60 ppmv	365 successive calendar day rolling average basis	EU27-B&WBOILER1-S1	SC VI3	40 CFR 60.102a(g)(1)(ii)

\* Compliance with this limit shall be considered compliance with the limits of R 336.1406(1) which have been subsumed under this streamlined requirement.

## III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall only burn sweet natural gas or refinery fuel gas as fuel in EU27-B&WBOILER1-S1.<sup>2</sup> (R 336.1201(3), R 336.2802, 40 CFR Part 60 subpart Db, 40 CFR 52.21)

## IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The heat input for EU27-B&WBOILER1-S1 shall not exceed 300 million BTUs per hour.<sup>2</sup> (R 336.1205, R 336.1220, R 336.1801, 40 CFR 52.21, 40 CFR Part 60 Subpart Db)
2. The permittee shall not operate EU27-B&WBOILER1-S1 unless the low NOx burners are installed and operating properly. (R 336.1205, R 336.1910, 40 CFR 52.21(c) and (d), 40 CFR Part 60)
3. The permittee shall not operate EU27-B&WBOILER1-S1 at firing rates of 50 to 300 MMBtu/hr heat input unless the Flue Gas Recirculation system is installed, maintained, and operated in a satisfactory manner. (R 336.1205, R 336.1224, R 336.1225, R 336.1901, R 336.2802, 40 CFR 52.21, 40 CFR Part 60)

## V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify emission rates from EU27-B&WBOILER1-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. (R 336.2001), (R 336.2003), (R 336.2004)  
 PM-10 (R 336.1205), (R 336.2802), (40 CFR 52.21)  
 PM (R 336.1205, R 336.2802, 40 CFR 52.21)  
 Sulfuric acid mist<sup>3</sup> (R 336.1201(3))



2. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and annually thereafter, the permittee shall verify emission rates from EU27-B&WBOILER1-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM<sup>3</sup> **(R 336.1201(3))**  
VOC<sup>3</sup> **(R 336.1201(3))**  
Sulfuric acid mist<sup>3</sup> **(R 336.1201(3))**
3. For an emission test for a specific pollutant required every three years and every five years, the requirement to conduct an emission test every five years for that pollutant does not apply; emission testing for that pollutant is required every three years. **(R 336.1201(3))**

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the NO<sub>x</sub> and oxygen emissions from EU27-B&WBOILER1-S1 on a continuous basis. The permittee shall install and operate the CEMS in accordance with the requirements of 40 CFR §§60.11, 60.13, and Part 60, Appendix A, the applicable performance specification test of 40 CFR Part 60 Appendices B and F. With respect to 40 CFR Part 60 Appendix F, in lieu of the requirements of 40 CFR Part 60 Appendix F §§5.1.1, 5.1.3, and 5.1.4, the permittee shall conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) once every twelve (12) calendar quarters, provided that a Cylinder Gas Audit is conducted each calendar quarter. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR Part 60 Subpart Db)**
2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the CO and oxygen emissions from EU27-B&WBOILER1-S1 on a continuous basis. The permittee shall install and operate the CEMS in accordance with the requirements of 40 CFR §§60.11, 60.13, and Part 60, Appendix A, the applicable performance specification test of 40 CFR Part 60 Appendices B and F. With respect to 40 CFR Part 60 Appendix F, in lieu of the requirements of 40 CFR Part 60 Appendix F §§5.1.1, 5.1.3, and 5.1.4, the permittee shall conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) once every twelve (12) calendar quarters, provided that a Cylinder Gas Audit is conducted each calendar quarter. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, )**
3. The permittee monitor and keep records of the concentration of hydrogen sulfide (H<sub>2</sub>S) in the refinery fuel gas burned EU27-B&WBOILER-S1 in accordance with the Federal Standards of Performance as specified in 40 CFR 60, Subpart J and Ja, in a manner and with instrumentation acceptable to the Air Quality Division. **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR 60 Subparts J/Ja)**
4. The permittee shall monitor and keep records of the concentration of total reduced sulfur (TRS) in the refinery fuel gas burned in EU27-B&WBOILER-S1, in a manner and with instrumentation acceptable to the Air Quality Division. The TRS monitor may be used as an alternative to the H<sub>2</sub>S monitoring required by SC VI.1.<sup>3</sup> **(R 336.1201(3))**
5. The permittee shall keep records of hourly fuel consumption rates, refinery fuel gas value, and calculations of the Btu/hr heat input rates to EU27-B&WBOILER1-S1 and make them available to the Department upon request. **(R 336.1205, 40 CFR Part 60 Subpart Db)**

**VII. REPORTING**

NA

**See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-B&WBOILER1	63 <sup>1</sup>	150 <sup>1</sup>	R 336.1225

**IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A, Db, and J/Ja, as they apply to EU27-B&WBOILER-S1. **(40 CFR Part 60 Subparts A, Db, and J/Ja)**

**Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup> This condition is included at the request of the permittee.

**The following conditions apply to: EU42-43SULRECOV-S1**

**DESCRIPTION:** Three Claus Sulfur Recovery Trains and two SCOT Tailgas Treating Units (subject to 40 CFR 60, Subpart J/Ja)

**Flexible Group ID:** FGPROCUNITS-S1, FGDHOUPANNUAL-S1

**POLLUTION CONTROL EQUIPMENT:** Thermal Oxidizer (Incinerator)

**I. EMISSION LIMIT(S)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. SO <sub>2</sub> emissions from the thermal oxidizer that controls the tail gas treatment units, No. 1 and No. 2	250 parts per million by volume <sup>2</sup>	Based upon a 12 hour average at zero percent oxygen on a dry basis	EU42-43-SULRECOV-S1	SC VI.1	40 CFR 60.102a(f)(1)(i)
2. SO <sub>2</sub> emissions from the thermal oxidizer that controls the tail gas treatment units, No. 1 and No. 2	175 parts per million by volume <sup>3</sup>	At zero percent oxygen on a dry basis on an annual rolling average, as determined at the end of each calendar month	EU42-43-SULRECOV-S1	SC VI.1	R 336.1201(3)
3. NO <sub>x</sub> emission rate from the thermal oxidizer	7.5 lb/hr <sup>2</sup>	Three hour average	EU42-43SULRECOV-S1	SC V1	R 336.1205, R 336.2802, 40 CFR 52.21
4. Carbon Monoxide emission rate from the thermal oxidizer	0.04 lb/MMBTU <sup>2</sup>	Three hour average	EU42-43SULRECOV-S1	SC V2	R 336.2802, 40 CFR 52.21
5. Particulate Matter emission rate from the thermal oxidizer	1.75 lb/hr <sup>2</sup>	Three hour average	EU42-43SULRECOV-S1	SC V4	R 336.1205, R 336.2802, 40 CFR 52.21
6. PM10 emission rate from the thermal oxidizer	1.75 lb/hr <sup>2</sup>	Three hour average	EU42-43SULRECOV-S1	SC V3	R 336.2802, 40 CFR 52.21
7. Volatile Organic Compound emission rate from the thermal oxidizer	0.0055 lb/MMBTU	Three hour average	EU42-43SULRECOV-S1	SC V5	R 336.1205, R 336.1702(a), R 336.2802, 40 CFR 52.21

## **II. MATERIAL LIMIT(S)**

<b>Material</b>	<b>Limit</b>	<b>Time Period/ Operating Scenario</b>	<b>Equipment</b>	<b>Monitoring/ Testing Method</b>	<b>Underlying Applicable Requirements</b>
1. Elemental sulfur produced	145 long tons per day <sup>2</sup>	Monthly average	EU42-43SULRECOV-S1	SC VI2	R 336.1201(3)
2. Elemental sulfur produced	130 long tons per day <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU42-43SULRECOV-S1	SC VI3	R 336.1201(3)

## **III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The maximum heat input in the thermal oxidizer of EU42-43SULRECOV-S1 shall not exceed a maximum of 25 million BTUs per hour, on a daily average. **(R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21)**
2. The natural gas usage in the thermal oxidizer of EU42-43SULRECOV-S1 shall not exceed a maximum of 25,000 cubic feet per hour, on a daily average, based on 1,000 BTU/scf. **(R 336.1225, 40 CFR 52.21)**
3. The permittee shall not operate the sulfur recovery units A, B, and C and the tail gas treatment units No. 1 and No. 2 in EU42-43SULRECOV-S1 unless the thermal oxidizer is installed, maintained and operated in a satisfactory manner. Satisfactory operation of the thermal oxidizer includes operating the thermal oxidizer as described in the startup, shutdown, and malfunction plan required by 40 CFR 63, Subparts A and UUU. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.1901, R 336.1910, R 336.2802, 40 CFR 52.21, 40 CFR 60 Subparts A and J/Ja)**
4. The permittee shall not operate the sulfur recovery units A, B, and C and the tail gas treatment units No. 1 and No. 2 in EU42-43SULRECOV-S1 unless a minimum temperature of 1200 degrees Fahrenheit on an hourly average and minimum retention time of 1.0 second in the thermal oxidizer is maintained. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.1901, R 336.1910, R 336.2802, 40 CFR 52.21, 40 CFR 60 Subparts A and J/Ja)**
5. Permittee shall not operate the sulfur recovery units A, B, and C and the tail gas treatment units No. 1 and No. 2, unless provisions of the Federal Standards of Performance for New Source Stationary Sources, 40 CFR Part 60, Subparts J and Ja-Standards of Performance for Petroleum Refineries, are met. **(40 CFR Part 60 Subparts A & J/Ja)**
6. The permittee shall not operate EU42-43SULRECOV-S1 unless an approved Startup, Shutdown and Malfunction Plan (SSMP), or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall include procedures for maintaining and operating in a satisfactory manner, EU42-43SULRECOV-S1, add-on air pollution control device, or monitoring equipment during malfunction events, and a program for corrective action for such events. If the SSMP fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the malfunction abatement plan within 45 days after such an event occurs. **(40 CFR Part 63, Subparts A & UUU)**
7. The permittee shall not operate EU42-43SULRECOV-S1 unless an approved Operation, Maintenance and Monitoring Plan (OMMP), or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. **(40 CFR Part 63.1564(a)(3))**

## **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. NA

## **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within 180 days after commencement of trial operation of the Detroit heavy oil upgrade project and every five years thereafter, the permittee shall verify NO<sub>x</sub> emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
2. Within 180 days after commencement of trial operation of the Detroit heavy oil upgrade project and every five years thereafter, the permittee shall verify CO emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
3. Within 180 days after commencement of trial operation of the Detroit heavy oil upgrade project and every five years thereafter, the permittee shall verify PM-10 emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
4. Within 180 days after commencement of trial operation of the Detroit heavy oil upgrade project and every five years thereafter, the permittee shall verify PM emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
5. Within 180 days after commencement of trial operation of the Detroit heavy oil upgrade project and every five years thereafter, the permittee shall verify VOC emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
6. Within 180 days after commencement of trial operation of the Detroit heavy oil upgrade project and every three years thereafter, the permittee shall verify sulfuric acid mist emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>3</sup>  
**(R 336.1201(3))**

7. For tests required by SC V.1 through 6, the following applies for valid, regularly scheduled tests, conducted during normal operations:<sup>3</sup> **(R 336.1201(3))**
- a. If a test indicates non-compliance with a permitted emission rate, and the test is required to be conducted on either a three or five year cycle, the frequency of such tests shall be annual for two consecutive years. Following two consecutive years of compliance, the frequency of testing shall return to the original three or five year cycle.

**See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Monitoring and recording of sulfur dioxide concentration, oxygen concentration, and operating information is required to comply with the Federal Standards of Performance for New Stationary Sources as specified in 40 CFR, Part 60, Subparts A and J. All source emissions data and operating data shall be submitted to the Division in an acceptable format within 30 days following the end of the quarter in which data were collected. **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR Part 60 Subparts A and J/Ja)**
2. The permittee shall keep daily records of the long tons of elemental sulfur produced in EU42-43SULRECOV-S1. **(R 336.1201(3))**
3. The permittee shall keep records of the long tons of elemental sulfur produced per day, on a 12-month rolling average, in EU42-43SULRECOV-S1. **(R 336.1201(3))**
4. The permittee shall monitor and record the temperature from the thermal oxidizer on a continuous basis with instrumentation acceptable to AQD. **(R336.1201(3))**
5. The permittee shall monitor the amount of natural gas used in the thermal oxidizer on a daily average basis. **(R 336.1225)**
6. The permittee shall keep records of emissions and operating information to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR 60 Subparts A and J. The permittee shall keep all source emissions data and operating information on file at the facility for a period of at least five years and make them available to the Department upon request. **(40 CFR Part 60 Subparts A & J/Ja)**

#### **VII. REPORTING**

NA

**See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

#### **VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter/Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SV43-H2	42.5 <sup>1</sup>	199.5 <sup>1</sup>	R 336.1225, R 336.1226(d)

**IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all provision of the federal Standards of Performance of New Stationary Sources as specified in 40 CFR Part 60 Subparts A, J, and where applicable Ja, as they apply to EU42-43SULRECOV-S1. **(40 CFR Part 60 Subparts A & J/Ja)**
2. The permittee comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and Subpart UUU, as they apply to EU42-43SULRECOV-S1. **(40 CFR Part 63 Subparts A & UUU)**

**Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup> This condition is included at the request of the permittee.

**The following conditions apply to: EU70-COKER-S1**

**DESCRIPTION:** The Coker converts Vacuum Resid (Crude Vacuum Tower Bottoms), a product normally sold as asphalt or blended into residual fuel oil, into lighter, more valuable products. The Vacuum Resid feedstock is heated before it enters the main fractionator, where lighter material vaporizes. The fractionator bottoms are routed through a fired heater and then into a coke drum. This emission unit consists of process vessels (fractionators), coke drums, heater, cooling tower, compressors, pumps, piping, drains, & various components (pumps & compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). This emission group includes the Coke Handling System, which will collect, size, and transport the petroleum coke created during the coking process. This system consists of a coke pit, storage pad, enclosed crusher, enclosed conveyors, and surge bins. Other EU's were created to address individual pieces of equipment within this unit that have specific applicable requirements.

**Flexible Group ID:** FGPROCUNITS-S1, FGDHOUANNUAL-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMIT(S)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Visible emissions	No visible emissions <sup>2</sup>	Based upon a six minute average	Truck loading; weigh bins; and the coke handling system beginning with the enclosed conveyor leading to the crusher.	SC VI.2	R 336.1301
2. VOC	20 tpy <sup>2</sup>	12-month rolling time period <sup>A</sup>	Exhaust from coke drum steam vent.	SC VI.8	R 336.1702
3. PM	1.0 tpy <sup>2</sup>	12-month rolling time period <sup>A</sup>	Exhaust from coke drum steam vent.	SC VI.8	R 336.1205, R 336.2802, 40 CFR 52.21
4. H2S	0.7 tpy <sup>1</sup>	12-month rolling time period <sup>A</sup>	Exhaust from coke drum steam vent.	SC VI.8	R 336.1224, R 336.1226(d)

<sup>A</sup> Based upon a 12-month rolling time period as determined at the end of each calendar month

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Coke production	500 tons per hour <sup>2</sup>	Daily average	Equipment subject to SC I.1.	SC VI.4	R 336.1205, R 336.2802, 40 CFR 52.21

2. The permittee shall not recycle coker blowdown water as quench water in the coke drums. (R 336.1205, R 336.2802, 40 CFR 52.21)

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall not vent the active coke drum to the atmosphere until the end of the coking cycle, when the drum pressure is 2 psig or less. <sup>2</sup> (R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21, 40 CFR Part 60 Subparts A and Ja)



2. The permittee shall not remove coke from a coke drum or handle coke after removal from a coke drum unless a program for continuous fugitive emissions control has been submitted to the AQD District Supervisor as a proposed revision to the Fugitive Dust Control Program required in Table B-1 of RO Permit 199700013c. The proposed revision shall address the following aspects of the coke handling system: all plant roadways, the plant yard, all material storage piles, and all material handling operations. The submitted program shall include, as a minimum, all of the following:
- a. Use of jet water sprays to empty the coke drum into a coke pit below the grade of the coke storage pad.
  - b. Use of water sprays on any coke stockpile and during coke crushing to maintain coke moisture.
  - c. Monitoring and correction of coke moisture to comply with SC I.1.
  - d. Use of bridge cranes to transfer coke from the pit to a stockpile and from a stockpile to the crusher receiving hopper, except as allowed in SC III.1.e.
  - e. Limited use of front-end loaders or other vehicles on the coke storage pad: only during bridge crane maintenance or breakdown.
  - f. Inspection, maintenance, and monitoring of a "totally enclosed gallery" for transporting crushed coke from the crusher to the surge/weigh bin system.

The permittee shall comply with the submitted program until the AQD District Supervisor approves the program or approves an amended program. Thereafter, the permittee shall comply with the approved program. At any time, the permittee may submit a modified program to the AQD District Supervisor for review and approval. <sup>2</sup> (R 336.1371, R 336.1372, Act 451 324.5524)

3. The height of any coke pile on the storage pad shall not exceed the height of the perimeter wall at any time. <sup>2</sup> (R 336.1301)
4. The permittee shall not operate any equipment in the coke handling system unless a malfunction abatement plan (MAP) as described in Rule 911(2), for the coke handling system, has been submitted no less than 120 days before commencing operation of the coke handling system, and is implemented and maintained. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. <sup>2</sup> (R 336.1205, R 336.1301, R 336.1331, R 336.1910, R 336.1911, R 336.2802, 40 CFR 52.21)

As a minimum, the MAP shall address the following:

- a. Maintaining required coke moisture content.
  - b. Maintaining the integrity of all enclosures: integral crusher enclosure, conveyor enclosures and the shed for truck loading.
  - c. Surge bin dust collector.
5. The permittee shall not cycle the coke drums more than 487 times per 12-month rolling time period, as determined at the end of each calendar month. (R 336.1205, R 336.2802, 40 CFR 52.21)
6. The permittee shall keep the coke adequately wetted to ensure that the opacity limit in SC I.1 is met. (R 336.1205, R 336.2802, R 336.1301, 40 CFR 52.21)

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall equip and maintain the coker with a gas recovery system to recover the coke drum vapors and route them to the fuel gas treatment system. <sup>2</sup> (R 336.1205, R 336.1702)
2. The permittee shall equip and maintain the coker with instrumentation to monitor the pressure in the coke drum during coking cycles. <sup>2</sup> (R 336.1205, R 336.1702, 40 CFR Part 60 Subparts A and Ja)

3. The permittee shall equip and maintain the coke storage area with a pit below the grade of the coke storage pad and with perimeter walls no less than 30 feet above the level of the coke storage pad. <sup>2</sup> (R 336.1301)
4. The permittee shall not convey crushed coke to the surge bins unless the totally enclosed conveyors and surge bin dust collector are installed, maintained, and operated in a satisfactory manner. <sup>2</sup> (R 336.1910)
5. The permittee shall not load trucks with crushed coke unless the surge bin dust collector is installed, maintained, and operated in a satisfactory manner. <sup>2</sup> (R 336.1910)
6. The permittee shall not operate the Coker wet gas compressor (70C1) unless the compressor seal vent is routed to EU-COKERFLARE-S1. (R 336.1205, R 336.2802, 40 CFR 52.21)

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Within 180 days after commencement of trial operation of EU70-COKER-S1, and annually thereafter, the permittee shall determine VOC, PM, and H<sub>2</sub>S emission rates from the coke drum steam vent by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Determination of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. At any time after completing five tests acceptable to the AQD District Supervisor, the permittee may request that the testing frequency be reduced. If the testing frequency is reduced, testing shall be conducted no less often than once every five years. Test results shall be used to calculate emissions as required by SC VI.8, and to determine compliance with the requirements for FGDHOU PANNUAL-S1. <sup>2</sup> (R 336.1205, R 336.1224, R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)
2. For tests required by SC V.1, the following applies for valid, regularly scheduled tests, conducted during normal operations: <sup>3</sup> (R 336.1201(3))
  - a. If a test indicates non-compliance with a permitted emission rate, and the test is required to be conducted on either a three or five year cycle, the frequency of such tests shall be annual for two consecutive years. Following two consecutive years of compliance, the frequency of testing shall return to the original three or five year cycle.

**See Appendix 1.5 of of Renewable Operating Permit MI-ROP-A9831-2012a**

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall keep, in a satisfactory manner, a record of the coke drum pressure at which the active drum is vented to the atmosphere. <sup>2</sup> (R 336.1205, R 336.1702, 40 CFR Part 60 Subparts A and Ja))
2. The permittee shall verify the absence of visible emissions by taking six-minute visible emission readings for the equipment listed in SC I.1 a minimum of once per calendar day. The reader shall take each visible emission reading during routine operating conditions. For purposes of this condition, the opacity reading is not required to use Method 9. If the permittee observes any visible emissions, the permittee shall immediately initiate corrective actions. <sup>2</sup> (R 336.1301)
3. The permittee shall monitor, in a satisfactory manner, the moisture of the coke on the coke storage pad and other non-enclosed areas three times per week, as provided in the approved fugitive dust control program for EU70-COKER-S1. <sup>2</sup> (R 336.1205, Act 451 324.5524)
4. The permittee shall keep, in a satisfactory manner, a daily record of the amount of coke loaded onto trucks for shipping. <sup>2</sup> (R 336.1205)

5. The permittee shall keep, in a satisfactory manner, records of coke moisture, as required by SC VI.3.<sup>2</sup> **(R 336.1205, Act 451 324.5524)**
6. The permittee shall keep, in a satisfactory manner, records of all visible emission readings required by SC VI.2. At a minimum, records shall include the date, time, name of observer/reader, and status of visible emissions.<sup>2</sup> **(R 336.1301)**
7. Within 30 days after completion of the installation of EU70-COKER-S1, the permittee or the authorized agent pursuant to Rule 204 shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of EU70-COKER-S1.<sup>2</sup> **(R 336.1216(1), R 336.1201(7)(a))**
8. The permittee shall calculate the VOC, PM, and H<sub>2</sub>S emission rates from the coke drum steam vent monthly, for the preceding 12-month rolling time period, using a method acceptable to the AQD District Supervisor. As soon as test results acceptable to the AQD District Supervisor are available from the testing required by SC V.1, the permittee shall use emission factors derived from testing to calculate emission rates.<sup>2</sup> **(R 336.1205, R 336.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
9. The permittee shall keep, in a satisfactory manner, records of the number of times the coke drums are cycled for each month and for each 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

## **VII. REPORTING**

1. NA

## **VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter/Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. Coke Drum Vent (unobstructed vertical discharge not required)	not restricted	222 <sup>1</sup>	R 336.1225, R 336.1226(d)

## **IX. OTHER REQUIREMENT(S)**

1. NA

### **Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup>This condition is included at the request of the permittee.

**The following conditions apply to: EU-COKERFLARE-S1**

**DESCRIPTION:** Coker Plant Flare. Area 76

**Flexible Group ID:** FGFLARES-S1, FGDHOUPANNUAL-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall install a coker blowdown gas recovery system upstream of EU-COKERFLARE-S1 to recover and route coke drum vent gas to the fuel gas treatment system. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
2. The permittee shall equip and maintain the coker blowdown gas recovery system with redundant recovery compressors, each designed with the capacity to individually recover all coke drum vent gases. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
3. At least 60 days prior to initial startup of the Detroit heavy oil upgrade project, the permittee shall submit to MDEQ a demonstration showing that the coker blowdown gas recovery system is sized appropriately for the coke drums. The demonstration shall include the following elements:
  - a. The design capacity of the coker blowdown gas recovery system and design specifications of components, such as the compressors.
  - b. Description of extra capacity and redundancies designed into the coker blowdown gas recovery system.
  - c. An explanation of the assumptions made in determining the appropriate design capacity of the coker blowdown gas recovery system.
  - d. Confirmation that no cross-over points exist between the coker blowdown gas recovery system and any fuel gas systems outside of it.**(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. NA

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. NA

## **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall install, maintain, and continuously operate a continuous flow measuring device to continuously monitor and record the flow of gas to the flare. The flow measuring device shall be sensitive to rapid flow changes, and have the capability of reporting both instantaneous velocity and totalized flow. Materials exposed to the flare gas shall be corrosion resistant. The flow measuring device shall (i) feature automated daily calibrations at low and high ranges, and (ii) shall signal alarms if the calibration error or drift is exceeded, provided that the monitor is equipped with such capability. The volumetric flow measuring device may consist of one or more flow meters, and, as combined, shall meet the following specifications. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
  - a. Velocity Range: 0.1-250 ft/sec
  - b. Repeatability:  $\pm 1\%$  of reading over the velocity range
  - c. Accuracy:  $\pm 20\%$  of reading over the velocity range of 0.1-1 ft/s and  $\pm 5\%$  of reading over the velocity range of 1-250 ft/s
  - d. Installation: Applicable AGA, ANSI, API, or equivalent standard.
  - e. Flow Rate Determination: Must be corrected to one atmosphere pressure and 68 °F and recorded as one-minute averages.
  - f. Data Records: Measured continuously and recorded over one minute averages. The instrument shall be capable of storing or transferring all data for later retrieval.
  - g. QA/QC: An annual verification of accuracy is required, and shall be specified by the manufacturer.
2. All data as generated by the flow measuring device shall be continuously recorded. The recording system must have the capability to generate one-minute average data from that which is continuously generated by the flow measuring device. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
3. The permittee shall maintain the flow measuring device in good operating condition at all times when the flare that it serves is operational, except when out of service due to:
  - a. Breakdowns and unplanned system maintenance, which shall not exceed 96 hours, cumulatively, per quarter for each reporting period; or,
  - b. Planned maintenance, which shall not exceed 14 days per 18 month period, provided that a written notification detailing the reason for maintenance and methods that will be used during the maintenance period to determine emissions associated with flare events is provided to the AQD District Supervisor prior to, or within 24 hours of, removal of the monitoring system from service.**(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**

## **VII. REPORTING**

1. At least 60 days prior to initial startup of the DHOUP, the Permittee shall submit to Michigan DEQ drawings identifying the location of the flow measuring device required by SC VI.1. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**

## **VIII. STACK/VENT RESTRICTION(S)**

NA

## **IX. OTHER REQUIREMENT(S)**

1. NA

### **Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: EU72-SULRBLOCK2-S1**

**DESCRIPTION:** Sulfur Block 2. Area 72. The Sulfur Block removes hydrogen sulfide from acid gas and converts it to elemental sulfur using Claus Process (Trains A and B), the SCOT Tail Gas Treating Unit process (Trains No. 1 and No. 2), and associated amine treating equipment. The exhaust tail gas is routed to a thermal oxidizer. This emission group consists of process vessels (including thermal reactors, an absorbing tower, and a stripping tower), heaters, tanks, containers, compressors, seals, process valves, flanges, connectors, etc.). Other EU's have been created to address individual units which have specific applicable requirements.

**Flexible Group ID:** FGPROCUNITS-S1, FGDHOU PANNUAL-S1

**POLLUTION CONTROL EQUIPMENT:** Thermal oxidizer

**I. EMISSION LIMITS**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NO <sub>x</sub>	0.2 lb/MMBTU <sup>2</sup>	Three hour average	EU72-SULRBLOCK2-S1	SC V.1	R 336.1205, R 336.2802, 40 CFR 52.21
2. SO <sub>2</sub>	250 ppmv at 0% oxygen <sup>2</sup>	12-hour average, dry gas basis	EU72-SULRBLOCK2-S1	SC VI.1	40 CFR 60.102a(f)(1)(i)
3. SO <sub>2</sub>	100 ppmv at 0% oxygen <sup>3</sup>	Annual rolling average	EU72-SULRBLOCK2-S1	SC VI.1	R 336.1201(3)
4. CO	0.04 lb/MMBTU <sup>2</sup>	Three hour average	EU72-SULRBLOCK2-S1	SC V.2	R 336.1205, R 336.2802, 40 CFR 52.21
5. PM	2.85 lb/hr <sup>2</sup>	Three hour average	EU72-SULRBLOCK2-S1	SC V.4	R 336.1205, R 336.2802, 40 CFR 52.21
6. PM-10	2.85 lb/hr <sup>2</sup>	Three hour average	EU72-SULRBLOCK2-S1	SC V.3	R 336.1205, R 336.2802, 40 CFR 52.21
7. VOC	0.0055 lb/MMBTU <sup>2</sup>	Three hour average	EU72-SULRBLOCK2-S1	SC V.5	R 336.1205, R 336.1702(a), R 336.2802, 40 CFR 52.21

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Elemental sulfur produced	260 long tons per day	12-month rolling average	EU72-SULRBLOCK2-S1	SC VI.8	R 336.1205, R 336.2802, 40 CFR 52.21

### **III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The heat input capacity of auxiliary fuel in the thermal oxidizer of EU72-SULRBLOCK2-S1 shall not exceed a maximum of 38 MM Btu per hour, on a daily average.<sup>2</sup> **(R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21)**
2. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and J, as they apply to EU72-SULRBLOCK2-S1. **(40 CFR Part 60 Subparts A & J/Ja)**
3. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and UUU, as they apply to EU72-SULRBLOCK2-S1. **(40 CFR Part 63 Subparts A & UUU)**

### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall not operate EU72-SULRBLOCK2-S1 unless the thermal oxidizer is installed, maintained and operated in a satisfactory manner. Satisfactory operation of the thermal oxidizer includes operating the thermal oxidizer as described in the startup, shutdown, and malfunction plan required by 40 CFR Part 63, Subparts A and UUU. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.2802, R 336.1901, R 336.1910, 40 CFR 52.21, 40 CFR 60.104(a)(2)(i))**
2. The permittee shall equip and maintain the EU72-SULRBLOCK2-S1 sulfur pits with a properly operating degassing system to remove and capture H<sub>2</sub>S and TRS from the sulfur in the sulfur pits prior to transfer to the sulfur storage tanks. Gases removed and captured by the degassing system shall be routed to the thermal oxidizer or returned to the inlet of EU72-SULRBLOCK2-S1. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within 180 days after commencement of trial operation and every five years thereafter, the permittee shall verify NO<sub>x</sub> emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>2</sup> **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804, 40 CFR 52.21, 40 CFR 60 Subparts A and J/Ja)**
2. Within 180 days after commencement of trial operation and every five years thereafter, the permittee shall verify CO emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>2</sup> **(R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
3. Within 180 days after commencement of trial operation and every five years thereafter, the permittee shall verify PM-10 emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>2</sup> For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**

4. Within 180 days after commencement of trial operation and every five years thereafter, the permittee shall verify PM emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>2</sup> **(R 336.1205, R 336.2001, R 336.2003, R 336.2004)**
5. Within 180 days after commencement of trial operation and every five years thereafter, the permittee shall verify VOC emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>2</sup> **(R 336.1205, R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
6. Within 180 days after commencement of trial operation and every three years thereafter, the permittee shall verify sulfuric acid mist emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>3</sup> **(R 336.1201(3))**
7. For tests required by SC V.1 through 6, the following applies for valid, regularly scheduled tests, conducted during normal operations:<sup>3</sup> **(R 336.1201(3))**
  - a. If a test indicates non-compliance with a permitted emission rate, and the test is required to be conducted on either a three or five year cycle, the frequency of such tests shall be annual for two consecutive years. Following two consecutive years of compliance, the frequency of testing shall return to the original three or five year cycle.

## **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the SO<sub>2</sub> and oxygen emissions from EU72-SULRBLOCK2-S1 on a continuous basis. The permittee shall install and operate the Continuous Emission Monitoring System (CEMS) to meet the timelines, requirements and reporting detailed in Appendix A to this permit and shall use the CEMS data for determining compliance with SC I.2.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR Part 60 Subparts A and J/Ja)**
2. The permittee shall monitor the amount of natural gas used in the thermal oxidizer on a daily average basis.<sup>2</sup> **(R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21)**
3. On a daily basis, the permittee shall calculate the heat input of natural gas used in the thermal oxidizer and keep records of the fuel usage and heat input to the thermal oxidizer.<sup>2</sup> **(R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21)**
4. The permittee shall monitor emissions and operating information for EU72-SULRBLOCK2-S1 in accordance with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and J/Ja.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1901, 40 CFR Part 60 Subparts A & J/Ja)**
5. The permittee shall monitor emissions and operating and maintenance information for EU72-SULRBLOCK2-S1 in accordance with the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and UUU. **(40 CFR Part 63 Subparts A & UUU)**



6. The permittee shall keep records of emissions and operating information to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and J/Ja. The permittee shall keep all source emissions data and operating information on file at the facility for a period of at least five years and make them available to the Department upon request. **(R 336.1205, 40 CFR Part 60 Subparts A & J/Ja)**
7. The permittee shall keep records of emission information and operating and maintenance information to comply with the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and UUU. The permittee shall keep all source emissions and operating and maintenance information on file at the facility for a period of at least five years and make them available to the Department upon request. **(40 CFR Part 63 Subparts A & UUU)**
8. The permittee shall keep records of the long tons of elemental sulfur produced per day, on a 12-month rolling average, in EU72-SULRBLOCK2-S1. **(R 336.1205, R 336.2802, 40 CFR 52.21)**
9. The permittee shall keep records of the hours per month and 12-month rolling time period, as determined at the end of each calendar month, that the sulfur pit degassing system did not operate while EU72-SULRBLOCK2-S1 was operating. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

## **VII. REPORTING**

1. The permittee shall provide written notification of construction and operation to comply with the federal Standards of Performance for New Stationary Sources, 40 CFR 60.7. The permittee shall submit this notification to the AQD District Supervisor within the time frames specified in 40 CFR 60.7.<sup>2</sup> **(40 CFR 60.7)**

## **VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV72-V22	96 <sup>2</sup>	150 <sup>2</sup>	R 336.1225

## **IX. OTHER REQUIREMENT(S)**

1. NA

### **Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup>This condition is included at the request of the permittee.

### FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGHEATERS-S1	All refinery heaters and boilers that burn refinery fuel gas (NSPS, 40 CFR 60, Subpart J and where applicable Subpart Ja)	EU04-VACHTR-S1, EU04-VAC2HTR-S1, EU05-CRUDEHTR-S1, EU08-GOHTCHARHTR-S1, EU09-ALKDIBREBHTR-S1, EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, EU14-CCRPLINTHTR-S1, EU16-NHTSTRIPREBOIL-S1, EU16-NHTCHARHTR-S1, EU19-KHTCHARHTR-S1, EU22-FUELOILHTR-S1, EU70-COKERHTR-S1, EU71-H2HTR-S1, EU77-DHTHTR-S1
FGCRUDE/VACHTRS-S1	Crude and Vacuum heaters	EU04-VACHTR-S1-S1, EU05-CRUDEHTR-S1
FGFLARES-S1	Refinery Flares (NSPS, 40 CFR 60, Subpart J and where applicable Subpart Ja)	EUCRUDEFLARE-S1, EUUNIFFLARE-S1, EUALKYFLARE-S1, EUCPFLARE-S1, EU-COKERFLARE-S1
FGPROCVENTS-S1	Miscellaneous process vents subject to Refiner MACT1, (40 CFR Part 63, Subpart CC)	EUVENT9V50-S1, EUVENT14SUMP-S1, EUVENT21XF-S1, EUVENT14XH-S1, EUVENT21V47-S1, EU21-S2OFFGAS-S1
FGPROCUNITS-S1	Process groups subject to leak detection and repair requirements (LDAR). This flexible grouping is subject to the consolidated LDAR requirements of 40 CFR 60, Subparts VV or VVa; 40 CFR 60, Subparts GGG or GGGa; 40 CFR 63, Subpart CC as listed in Section V and VI of this table. For the purpose of this consolidated LDAR requirement, the following are affected facilities: (1) compressors and (2) the group of all equipment {see definition in 40 CFR 60.591} within a process unit.	EU04-VACUUM-S1, EU05-CRUDE-S1, EU07-DHT-S1, EU08-GOHT-S1, EU09-ALKYLATION-S1, EU11-FCCU-S1, EU12-GASCON-S1, EU13-PROPYLENE-S1, EU14-CCRPLATFORMER-S1, EU16-NAPHYHYTREAT-S1, EU19-KEROHYTREAT-S1, EU21-CPTREATER-S1, EU22-TANKFARMS-S1, EU22-LPGRAILRACK-S1, EU22-ASPHLOAD-S1, EU29-WASTEWATER-S1, EU38-ROUGETERMNL-S1, EU42-43SULRECOV-S1, EU99-LPGLOADRACK-S1, EU41-SOURWATER-S1, EU70-COKER-S1, EU71-H2PLANT-S1, EU72-SULRBLOCK2-S1, EU73-SOURWATER2-S1, EU77-DHTHYTREAT-S1, EU76-UTILITIES-S1, EU78-FUELGASRECOVERY-S1

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGEFRTANKS-S1	External floating roof tanks (EFR) that are subject to 40 CFR Part 63, Subpart CC as Group 1 Vessels or subject to 40 CFR 60, Subpart Kb. These tanks may also be subject to Michigan Air Pollution Control Rule 623(R336.1623) and/or NSPS Subpart QQQ. This consolidated requirement basically adopts NSPS Kb for these EFR tanks.	EUTANK32-S1, EUTANK33-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, EUTANK128-S1, EUTANK129-S1, EUTANK130-S1, EUTANK601-S1, EU29TANK40-S1-S1, EU29TANK41-S1
FG29TANKS40-41-S1	Two external floating roof (EFR) tanks for slop oil in the wastewater treatment plant (WWTP). These tanks are subject to 40 CFR Part 60, Subpart QQQ.	EU29TANK40-S1, EU29TANK41-S1
FGGROUP2-S1	40 CFR 63 Subpart CC Group 2 Storage Tanks.	EUTANK2-S1, EUTANK11-S1, EUTANK16-S1, EUTANK17-S1, EUTANK18-S1, EUTANK24-S1, EUTANK27-S1, EUTANK28-S1, EUTANK30-S1, EUTANK31-S1, EUTANK50-S1, EUTANK52-S1, EUTANK54-S1, EUTANK56-S1, EUTANK59-S1, EUTANK60-S1, EUTANK62-S1, EUTANK63-S1, EUTANK64-S1, EUTANK70-S1, EUTANK71-S1, EUTANK100-S1, EUTANK102-S1, EUTANK103-S1, EUTANK104-S1, EUTANK105-S1, EUTANK106-S1, EUTANK107-S1, EUTANK120-S1, EUTANK125-S1, EUTANK126-S1, EUTANK127-S1, EUTANK128-S1, EUTANK314-S1, EUTANK315-S1, EUTANK316-S1, EUTANK317-S1, EUTANK318-S1, EUTANK319-S1, EUTANK320-S1, EUTANK324-S1
FG29-ICF-S1	Two induced gas flotation units which are part of the wastewater treatment plant and are covered by permit 190-00A.	EU29-IGF1-S1, EU29-IGF2-S1
FGTANKS133&134-S1	Two tanks which store asphalt and have visible emission control equipment.	EUTANK133-S1, EUTANK134-S1

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGCRUDETANKS-S1	External floating roof (EFR) tanks that are subject to 40 CFR Part 63, Subpart CC as Group 1 Vessels or subject to 40 CFR 60, Subpart Kb. These tanks may also be subject to Michigan Air Pollution Control Rule 623 (R336.1623) and/or NSPS Subpart QQQ. This consolidated requirement basically adopts NSPS Kb for these EFR tanks.	EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, EUTANK129-S1, EUTANK130-S1
FGNAPHTHATANKS-S1	Internal and external floating roof tanks that are subject to 40 CFR 63, Subpart CC as Group 1 Vessels or subject to 40 CFR 60, Subpart Kb. These tanks may also be subject to Michigan Air Pollution Control Rule 623 (R336.1623) and/or NSPS Subpart QQQ. This consolidated requirement basically adopts NSPS Kb for these tanks.	EUTANK19-S1, EUTANK40-S1, EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK49-S1, EUTANK53-S1, EUTANK55-S1, EUTANK57-S1, EUTANK58-S1, EUTANK61-S1, EUTANK72-S1, EUTANK79-S1, EUTANK101-S1, EUTANK104-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK116-S1, EUTANK118-S1, EUTANK120-S1, EUTANK128-S1, EUTANK135-S1
FGIFRTANKS-S1	Internal floating roof tanks (IFR) that are subject to 40 CFR Part 63, Subpart CC as Group 1 Vessels or subject to 40 CFR 60, Subpart Kb. These tanks also may be subject to Michigan Air Pollution Control Rule 604 (R336.1604). This represents a consolidated requirement for internal floating roof tanks.	EUTANK19-S1, EUTANK23-S1, EUTANK40-S1, EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK49-S1, EUTANK51-S1, EUTANK52-S1, EUTANK53-S1, EUTANK55-S1, EUTANK57-S1, EUTANK58-S1, EUTANK61-S1, EUTANK72-S1, EUTANK79-S1, EUTANK101-S1, EUTANK104-S1, EUTANK116-S1, EUTANK118-S1, EUTANK120-S1, EUTANK135-S1, EUTANK507-S1, EUTANK508-S1, EUTANK216-S1
FGCOOLTOWERS-S1	Cooling towers	EUCOOLTOWERA-S1, EUCOOLTOWERC-S1, EUCOOLTOWERD-S1, EUCOOLTOWERE-S1, EUCOOLTOWERF-S1, EUCOOLTOWERG-S1, EUCOOLTOWERH-S1, EUCOOLTOWERNEW-S1

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGDHOUPANNUAL-S1	These emission units and flexible groups used the Actual-to-Potential test for PSD applicability. The emission limits in this group serve to limit the Potential to Emit of covered equipment.	EU11-FCCU-S1, EU14-CCRPLCATREG-S1, EU21-S2OFFGAS-S1, FG29-IGF-S1, EU42-43SULRECOV-S1, EU70-COKER-S1, EU-COKERFLARE-S1, EU72-SULRBLOCK2-S1, FG-HEATERS-S1, FG-PROCUNITS-S1, FGCOOLTOWERS-S1, FGHOUP TANKS-S1, EU71-H2STEAMSYS-S1, EU27-B&WBOILER1-S1, EU27-ZURNBOILER-S1
FGREFINEFLARES-S1	Refinery flares existing prior to the Detroit Heavy Oil Upgrade Project	EU-CRUDEFLARE-S1, EU-UNIFFLARE-S1, EU-ALKYFLARE-S1, EU-CPFLARE-S1
FGHOUP TANKS-S1	Storage tanks associated with the Detroit Heavy Oil Upgrade Project	EUTANK16-S1, EUTANK17-S1, EUTANK19-S1, EUTANK23-S1, EUTANK24-S1, EUTANK27-S1, EUTANK28-S1, EUTANK40-S1, EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK49-S1, EUTANK50-S1, EUTANK53-S1, EUTANK54-S1, EUTANK55-S1, EUTANK56-S1, EUTANK57-S1, EUTANK58-S1, EUTANK59-S1, EUTANK60-S1, EUTANK61-S1, EUTANK62-S1, EUTANK63-S1, EUTANK64-S1, EUTANK70-S1, EUTANK71-S1, EUTANK72-S1, EUTANK100-S1, EUTANK101-S1, EUTANK102-S1, EUTANK103-S1, EUTANK104-S1, EUTANK105-S1, EUTANK106-S1, EUTANK107-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, EUTANK116-S1, EUTANK120-S1, EUTANK125-S1, EUTANK126-S1, EUTANK127-S1, EUTANK128-S1, EUTANK129-S1, EUTANK130-S1, EUTANK507-S1, EUTANK508-S1, EUTANK601-S1, EUTANK216-S1, EU29TANK40-S1, EU29TANK41-S1
FGMACTDDDDDD-S1	All boilers and process heaters at the Detroit Refinery are regulated under the existence source standards in 40 CFR Part 63 Subpart DDDDD National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters.	All boilers and process heaters at the Detroit Refinery

**The following conditions apply to: FGHEATERS-S1**

**DESCRIPTION:** All refinery heaters that burn refinery fuel gas (NSPS, 40 CFR 60, Subpart J and where applicable Ja)

**Emission Units:** EU04-VACHTR-S1, EU04-VAC2HTR-S1, EU05-CRUDEHTR-S1, EU08-GOHTCHARHTR-S1, EU09-ALKYDIBREBHTR-S1, EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, EU14-CCRPLINTHTR-S1, EU16-NHTSTRIPREBOIL-S1, EU16-NHTCHARHTR-S1, EU19-KHTCHARHTR-S1, EU22-FUELOILHTR-S1, EU70-COKERHTR-S1, EU71-H2HTR-S1, EU77-DHTHTR-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NOx	0.05 lb/MMBTU <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month.	EU04-VACHTR-S1	SC VI.7	R 336.1205, R 336.2802, 40 CFR 52.21, Consent Order No. 01-40119
2. NOx	60 ppmv, dry basis corrected to 0%O <sub>2</sub> <sup>2</sup>	30 day rolling average basis	EU04-VACHTR-S1	SC VI.7	40 CFR Part 60 Subpart Ja
3. NOx	0.05 lb/MMBTU <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU05-CRUDEHTR-S1	SC VI.7	R 336.1205, R 336.2802, 40 CFR 52.21, Consent Order No. 01-40119.
4. NOx	60 ppmv dry basis corrected to 0%O <sub>2</sub> <sup>2</sup>	30 day rolling average basis	EU05-CRUDEHTR-S1	SC VI.7	40 CFR Part 60 Subpart Ja
5. NOx	0.05 lb/MMBTU <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU08-GOHTCHARHTR-S1	SC VI.5	R 336.1205, R 336.2802, 40 CFR 52.21
6. NOx	0.05 lb/MMBTU <sup>2</sup>	Three hour average	EU11-FCCUCHARHTR-S1	SC V.11	R 336.1205, R 336.2802, 40 CFR 52.21
7. NOx	0.05 lb/MMBTU <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU14-CCRPLCHARHTR-S1	SC V.11, VI.6	R 336.1205, R 336.2802, 40 CFR 52.21

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
8. NOx	0.05 lb/MMBTU <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU14-CCRPLINTHTR-S1	SC V.11, VI.6	R 336.1205, R 336.2802, 40 CFR 52.21
9. NOx	0.20 lb/MMBTU <sup>2</sup>	Three hour average	EU16-NHTCHARHTR-S1	SC V.8	R 336.1205, R 336.2802, 40 CFR 52.21
10. NOx	0.20 lb/MMBTU <sup>2</sup>	Three hour average	EU16-NHTSTRIPREBOIL-S1	SC V.8	R 336.1205, R 336.2802, 40 CFR 52.21
11. NOx	0.20 lb/MMBTU <sup>2</sup>	Three hour average	EU19-KHTCHARHTR-S1	SC V.8	R 336.1205, R 336.2802, 40 CFR 52.21
12. NOx	0.10 lb/MMBTU <sup>2</sup>	Three hour average	EU22-FUELOILHTR-S1	SC V.8	R 336.1205, R 336.2802, 40 CFR 52.21
13. NOx	40 ppmv dry basis corrected to 0%O <sub>2</sub> <sup>2</sup>	30 day rolling average basis	EU04-VAC2HTR-S1	SC VI.7	R 336.1205, R 336.2802, 40 CFR 52.21 40 CFR Part 60 Subpart Ja
14. NOx	0.05 lb/MMBTU <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU70-COKERHTR-S1	SC VI.7	R 336.1205, R 336.2802, 40 CFR 52.21
15. NOx	60 ppmv dry basis corrected to 0%O <sub>2</sub> <sup>2</sup>	30 day rolling average basis	EU70-COKERHTR-S1	SC VI.7	40 CFR Part 60 Subpart Ja
16. NOx	40 ppmv dry basis corrected to 0%O <sub>2</sub> <sup>2</sup>	30 day rolling average basis	EU77-DHTHTR-S1	SC VI.7	R 336.1205, R 336.2802, 40 CFR 52.21 40 CFR Part 60 Subpart Ja
17. NOx	0.013 lb/MMBTU <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU71-H2HTR-S1	SC VI.5	R 336.1205, R 336.2802, 40 CFR 52.21
18. NOx	40 ppmv dry basis corrected to 0%O <sub>2</sub> <sup>2</sup>	30 day rolling average basis	EU09-ALKYDIBREBHTR-S1	SC VI.7	R 336.1205, R 336.2802, 40 CFR 52.21 40 CFR Part 60 Subpart Ja
19. NOx	85 Tons/Yr <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month.	EU04-VACHTR-S1 & EU05CRUDEHTR-S1 combined.	SC VI.13	Consent Order No. 01-40119

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
20. PM	6.86 Tons/Yr <sup>2</sup>	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU71-H2HTR-S1	SC VI.14	R 336.1205, R 336.2802, 40 CFR 52.21
21. PM	0.0034 lb/MMBTU	Three hour average	EU71-H2HTR-S1	SC V.1	R 336.1205, R 336.2802, 40 CFR 52.21
22. PM	0.0019 lb/MMBTU	Three hour average	Each emission unit in FGHEATERS-S1 except EU71-H2HTR-S1. For EU11-FCCUCHARHTR-S1, this limit applies only to the primary fuel to the heater (refinery fuel gas).	SC V.2, V.4, V.6, V.7, V.8, V.11, V.13	R 336.1205, R 336.2802, 40 CFR 52.21
23. PM10	0.010 lb/MMBTU	Three hour average	EU71-H2HTR-S1	SC V.1	R 336.1205, R 336.2802, 40 CFR 52.21
24. PM10	0.0076 lb/MMBTU	Three hour average	Each emission unit in FGHEATERS-S1 except EU71-H2HTR-S1. For EU11-FCCUCHARHTR-S1, this limit applies only to the primary fuel to the heater (refinery fuel gas).	SC V.2, V.4, V.6, V.7, V.8, V.11, V.13	R 336.1205, R 336.2802, 40 CFR 52.21
25. PM2.5	0.0076 lb/MMBTU	Three hour average	EU09-ALKYDIBREBHTR-S1	SC V.7	R 336.1205, R 336.2903, 40 CFR Part 51 Appendix S
26. CO	0.01 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU05-CRUDEHTR-S1	SC VI.8	R 336.1201(3)
27. CO	0.01 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU70-COKERHTR-S1	SC VI.8	R 336.1201(3)
28. CO	0.02 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU11-FCCUCHARHTR-S1	SC VI.8	R 336.1201(3)
29. CO	0.013 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU14-CCRPLCHARHTR-S1	SC VI.8	R 336.1201(3)



Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
30. CO	0.01 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU04-VACHTR-S1	SC VI.8	R 336.1201(3)
31. CO	0.02 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU08-GOHTCHARHTR-S1	SC VI.8	R 336.1201(3)
32. CO	0.013 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU14-CCRPLINTHTR-S1	SC VI.8	R 336.1201(3)
33. CO	0.02 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU04-VAC2HTR-S1	SC VI.8	R 336.1201(3)
34. CO	0.02 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU77-DHTHTR-S1	SC VI.8	R 336.1201(3)
35. CO	0.02 lb/MMBTU <sup>2</sup>	Three hour average	EU16-NHTCHARHTR-S1, EU16-NHTSTRIPREBOIL-S1, EU19-KHTCARHTR, EU22-FUELOILHTR-S1, and EU09-ALKYDIBREBHTR-S1	SC V.7, V.8	R 336.1205, R 336.2802, 40 CFR 52.21
36. CO	13 Tons/Yr <sup>2</sup>	Based on a 12-month rolling time period as determined at the end of each calendar month	EU71-H2HTR-S1	SC V.14	R 336.1910
37. VOC	0.0055 lb/MMBTU <sup>2</sup>	Three hour average	Each emission unit in FGHEATERS-S1	SC V.1, V.2, V.4, V.6	R 336.1702

## II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Hydrogen sulfide content of the refinery fuel gas burned in any combustion device in FGHEATERS-S1	0.10 grain per dry standard cubic foot (230 milligrams per dry standard cubic meter or 160 ppm <sub>dv</sub> ) <sup>2*</sup>	Based upon a three hour average	FGHEATERS-S1	SC VI.1	R 336.1226(d) 40 CFR 60.104(a)(1) 40 CFR 60.102a(g)(1)(ii) 40 CFR Part 60 Subparts A and J/Ja
2. Hydrogen sulfide content of the refinery fuel gas burned in any combustion device in FGHEATERS-S1	60 ppm <sub>dv</sub> <sup>3</sup>	Annual rolling average, as determined at the end of each calendar month	FGHEATERS-S1	SC VI.1	R 336.1201(3) 40 CFR 60.102a(g)(1)(ii)

\* Compliance with this limit shall be considered compliance with the limits of R 336.1406(1) which have been subsumed under this streamlined requirement.

## III. PROCESS/OPERATIONAL RESTRICTION(S)

- The heat input to EU04-VACHTR-S1 shall not exceed 177 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU05-CRUDEHTR-S1 shall not exceed 240 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU08-GOHTHTR-S1 shall not exceed 115 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU09-ALKYDIBREBHTR-S1 shall not exceed 88 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU09-ALKYDIBREBHTR-S1 shall not exceed 84 MMBTU/hr on an annual rolling average, as determined at the end of each calendar month.<sup>3</sup> (R 336.1201(3))
- The heat input to EU11-FCCUCHARHTR-S1 shall not exceed 130 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU14-CCRPLCHARHTR-S1 shall not exceed 138 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU14-CCRPLINTHTR-S1 shall not exceed 138 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU16-NHTCHARHTR-S1 shall not exceed 64 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU16-NHTSTRIPREBOIL-S1 shall not exceed 46 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU19-KHTCHARHTR-S1 shall not exceed 18 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)
- The heat input to EU22-FUELOILHTR-S1 shall not exceed 7.5 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)

13. The heat input to EU04-VAC2HTR-S1 shall not exceed 96 MMBTU/hr on a daily average.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**
14. The heat input to EU04-VAC2HTR-S1 shall not exceed 71 MMBTU/hr on an annual rolling average, as determined at the end of each calendar month.<sup>3</sup> **(R 336.1201(3))**
15. The heat input to EU70-COKERHTR-S1 shall not exceed 285 MMBTU/hr on a daily average.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**
16. The heat input to EU70-COKERHTR-S1 shall not exceed 250 MMBTU/hr on an annual rolling average, as determined at the end of each calendar month.<sup>3</sup> **(R 336.1201(3))**
17. The heat input to EU77-DHTHTR-S1 shall not exceed 91 MMBTU/hr on a daily average.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**
18. The heat input to EU71-H2HTR-S1 shall not exceed 950 MMBTU/hr on a daily average.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**
19. The heat input to EU71-H2HTR-S1 shall not exceed 640 MMBTU/hr on an annual rolling average, as determined at the end of each calendar month.<sup>3</sup> **(R 336.1201(3))**
20. Except for EU71-H2HTR-S1, the permittee shall only fire refinery fuel gas and/or sweet natural gas in FGHEATERS-S1.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**
21. The permittee shall only fire refinery fuel gas, pressure swing absorption gas, Syngas, and/or natural gas in EU71-H2HTR-S1.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**
22. The permittee shall not operate EU04-VACHTR-S1, EU05-CRUDEHTR-S1, EU77-DHTCHARHTR-S1, EU08-GOHTHTR-S1, EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, or EU14-CCRPLINTHTR-S1 unless the unit's low NO<sub>x</sub> burners are installed, maintained, and operated in a satisfactory manner.<sup>2</sup> **(R 336.1205, R 336.1910, R 336.2802, 40 CFR 52.21)**
23. The permittee shall not operate EU04-VAC2HTR-S1, EU09-ALKYDIBREBHTR-S1, EU70-COKERHTR-S1, or EU77-DHTHTR-S1 unless the unit's ultra low-NO<sub>x</sub> burners are installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1910, R 336.2802, 40 CFR 52.21)**
24. The permittee shall not operate EU71-H2HTR-S1 unless the selective catalytic reduction (SCR) system is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes following the approved malfunction abatement plan. **(R 336.1205, R 336.1910, R 336.2802, 40 CFR 52.21)**
25. The permittee shall not operate EU71-H2HTR-S1 unless an acceptable malfunction abatement plan (MAP) for the SCR system has been submitted to the AQD District Supervisor. The plan shall include a catalyst replacement schedule based on the SCR manufacturer's recommended guidelines. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1205, R 336.1224, R 336.1225, R 336.1911, R 336.2802, 40 CFR 52.21)**

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. NA

## **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within 180 days after commencement of trial operation of EU71-H2HTR-S1 and annually thereafter, the permittee shall verify emission rates from EU71-H2HTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM-10 **(R 336.1205), (R 336.2802), (40 CFR 52.21)**  
PM **(R 336.1205), (R 336.2802), (40 CFR 52.21)**  
VOC **(R 336.1702)**  
Sulfuric acid mist<sup>3</sup> **(R 336.1201(3))**
2. Within 180 days after commencement of trial operation of EU04-VAC2HTR-S1 and every five years thereafter, the permittee shall verify emission rates from EU04-VAC2HTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM-10 **(R 336.1205), (R 336.2802), (40 CFR 52.21)**  
PM **(R 336.1205), (R 336.2802), (40 CFR 52.21)**  
VOC **(R 336.1702)**
3. Within 180 days after commencement of trial operation of EU04-VAC2HTR-S1 and every five years thereafter for sulfuric acid mist, and every three years thereafter for VOC, the permittee shall verify emission rates from EU04-VAC2HTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001), (R 336.2003), (R 336.2004)**  
VOC<sup>3</sup> **(R 336.1201(3))**  
Sulfuric acid mist<sup>3</sup> **(R 336.1201(3))**
4. Within 180 days after commencement of trial operation of EU70-COKERHTR-S1 and annually thereafter, the permittee shall verify emission rates from EU70-COKERHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM-10 **(R 336.1205), (R 336.2802), (40 CFR 52.21)**  
PM **(R 336.1205), (R 336.2802), (40 CFR 52.21)**  
VOC **(R 336.1702)**
5. Within 180 days after commencement of trial operation of EU70-COKERHTR-S1 and every five years thereafter, the permittee shall verify emission rates from EU70-COKERHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001), (R 336.2003), (R 336.2004)**  
Sulfuric acid mist<sup>3</sup> **(R 336.1201(3))**

6. Within 180 days after commencement of trial operation of EU77-DHTHTR-S1 and every five years thereafter, the permittee shall verify emission rates from EU77-DHTHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001), (R 336.2003), (R 336.2004)**
- |                                 |   |
|---------------------------------|---|
| PM-10                           | <b>(R 336.1205), (R 336.2802), (40 CFR 52.21)</b> |
| PM                              | <b>(R 336.1205), (R 336.2802), (40 CFR 52.21)</b> |
| VOC                             | <b>(R 336.1702)</b>                               |
| Sulfuric acid mist <sup>3</sup> | <b>(R 336.1201(3))</b>                            |
7. Within 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify emission rates from EU09-ALKYDIBREBHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001), (R 336.2003), (R 336.2004)**
- |                                 |  |
|---------------------------------|--|
| PM-10                           | <b>(R 336.1205), (R 336.2802), (40 CFR 52.21)</b>              |
| PM                              | <b>(R 336.1205, R 336.2802, 40 CFR 52.21)</b>                  |
| PM-2.5                          | <b>(R 336.1205), (R 336.2903), (40 CFR Part 51 Appendix S)</b> |
| CO                              | <b>(R 336.1205, R 336.2802, 40 CFR 52.21)</b>                  |
| Sulfuric acid mist <sup>3</sup> | <b>(R 336.1201(3))</b>   |
8. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify emission rates from EU16-NHTCHARHTR-S1, EU16-NHTSTRIPREBOIL-S1, EU19-KHTCHARHTR-S1, and EU22-FUELOILHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001), (R 336.2003), (R 336.2004)**
- |                                 |   |
|---------------------------------|---|
| NO <sub>x</sub>                 | <b>(R 336.1205, R 336.2802, 40 CFR 52.21)</b>     |
| PM-10                           | <b>(R 336.1205), (R 336.2802), (40 CFR 52.21)</b> |
| PM                              | <b>(R 336.1205, R 336.2802, 40 CFR 52.21)</b>     |
| CO                              | <b>(R 336.1205, R 336.2802, 40 CFR 52.21)</b>     |
| Sulfuric acid mist <sup>3</sup> | <b>(R 336.1201(3))</b>                            |
9. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every three years thereafter, the permittee shall verify emission rates from EU16-NHTCHARHTR-S1 and EU16-NHTSTRIPREBOIL-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001), (R 336.2003), (R 336.2004)**
- |                              |                        |
|------------------------------|------------------------|
| NO <sub>x</sub> <sup>3</sup> | <b>(R 336.1201(3))</b> |
|------------------------------|------------------------|

10. Within 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify emission rates from EU09-ALKYDIBREBHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001), (R 336.2003), (R 336.2004)**  
VOC<sup>3</sup> **(R 336.1201(3))**
11. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify emission rates from EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, and EU14-CCRPLINTHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001), (R 336.2003), (R 336.2004)**  
NO<sub>x</sub> This requirement does not apply for an emission unit listed in this condition if a NO<sub>x</sub> CEMS is installed, calibrated, maintained and operated in a satisfactory manner on that emission unit. **(R 336.1205, R 336.2802, 40 CFR 52.21)**  
PM-10 **(R 336.1205), (R 336.2802), (40 CFR 52.21)**  
PM **(R 336.1205, R 336.2802, 40 CFR 52.21)**  
Sulfuric acid mist<sup>3</sup> **(R 336.1201(3))**
12. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every three years thereafter, the permittee shall verify emission rates from EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, and EU14-CCRPLINTHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM<sup>3</sup> **(R 336.1201(3))**  
VOC<sup>3</sup> **(R 336.1201(3))**
13. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter, the permittee shall verify emission rates from EU04-VACHTR-S1, EU05-CRUDEHTR-S1, and EU08-GOHTCHARHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM-10 emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM-10 **(R 336.1205), (R 336.2802), (40 CFR 52.21)**  
PM **(R 336.1205, R 336.2802, 40 CFR 52.21)**  
Sulfuric acid mist<sup>3</sup> **(R 336.1201(3))**

14. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and annually thereafter, the permittee shall verify emission rates from EU04-VACHTR-S1 and EU05-CRUDEHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM<sup>3</sup> **(R 336.1201(3))**  
VOC<sup>3</sup> **(R 336.1201(3))**
15. Following issuance of this permit, but not later than 180 days after commencement of trial operation of the heavy oil upgrade project and every five years thereafter for VOC, and every three years thereafter for PM, the permittee shall verify emission rates from EU08-GOHTCHARHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001), (R 336.2003), (R 336.2004)**  
PM<sup>3</sup> **(R 336.1201(3))**  
VOC<sup>3</sup> **(R 336.1201(3))**
16. For tests required by SC V.1 through V.15, the following applies for valid, regularly scheduled tests, conducted during normal operations:<sup>3</sup> **(R 336.1201(3))**  
a. If a test indicates non-compliance with a permitted emission rate, and the test is required to be conducted on either a three or five year cycle, the frequency of such tests shall be annual for two consecutive years. Following two consecutive years of compliance, the frequency of testing shall return to the original three or five year cycle.
17. For any emission unit required to conduct an emission test in SC V.1 through V.15 for a specific pollutant every three years and every five years, the requirement to conduct an emission test every five years for that pollutant does not apply; emission testing for that pollutant is required every three years. **(R 336.1201(3))**

**See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

## **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee monitor and keep records of the concentration of hydrogen sulfide (H<sub>2</sub>S) in the refinery fuel gas burned in each heater in accordance with the Federal Standards of Performance as specified in 40 CFR 60, Subpart J and Ja, in a manner and with instrumentation acceptable to the Air Quality Division. **(R 336.1205, R 336.1226(d), R 336.2802, 40 CFR 52.21, 40 CFR 60.105(a)(4))**
2. The permittee shall monitor and keep records of the concentration of total reduced sulfur (TRS) in the refinery fuel gas burned in each heater/boiler, in a manner and with instrumentation acceptable to the Air Quality Division. The TRS monitor may be used as an alternative to the H<sub>2</sub>S monitoring required by SC VI.1.<sup>3</sup> **(R 336.1201(3))**
3. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H<sub>2</sub>S or TRS in the fuel gas being burned.<sup>2</sup> **(40 CFR 60.105(a)(4)(ii))**
4. The permittee shall keep records of emissions and operating information to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A, J, and where applicable Ja.<sup>2</sup> **(40 CFR Part 60 Subparts A & J/Ja)**

5. The permittee shall install, calibrate, maintain and operate in a satisfactory manner devices to monitor and record on a continuous basis the NO<sub>x</sub> and oxygen emissions from EU08-GOHTCHARHTR-S1 and EU71-H2HTR-S1. The permittee shall install and operate the Continuous Emission Monitoring System (CEMS) to meet the timelines, requirements and reporting detailed in Appendix A and shall use the CEMS data for determining compliance with the appropriate emission limits in SC I.5 and 1.17. **(R 336.1205, R 336.2802, 40 CFR 52.21)**
6. The permittee shall install, calibrate, maintain and operate in a satisfactory manner devices to monitor and record on a continuous basis the NO<sub>x</sub> and oxygen emissions from EU14-CCRPLCHARHTR-S1 and EU14-CCRPLINTHTR-S1. The permittee shall install and operate the Continuous Emission Monitoring System (CEMS) to meet the timelines, requirements and reporting detailed in Appendix A and shall use the CEMS data for determining compliance with the appropriate emission limits in SC I.7 and I.8.<sup>3</sup> **(R 336.1201(3))**
7. The permittee shall install, calibrate, maintain and operate in a satisfactory manner devices to monitor and record on a continuous basis the NO<sub>x</sub> and oxygen emissions from EU04-VAC2HTR-S1, EU09-ALKYDIBREBHTR-S1, EU77-DHTHTR-S1, EU70-COKERHTR-S1, EU04-VACHTR-S1, EU05-CRUDEHTR-S1. The permittee shall install and operate the Continuous Emission Monitoring System (CEMS) to meet the timelines, requirements and reporting detailed in Appendix A.<sup>2</sup> **(40 CFR Part 60 Subpart Ja, Consent Order No. 01-40119)**
8. The permittee shall install, calibrate, maintain and operate in a satisfactory manner devices to monitor and record on a continuous basis the CO and oxygen emissions from EU70-COKERHTR-S1, EU71-H2HTR-S1, EU08-GOHTCHARHTR-S1, EU14-CCRPLCHARHTR-S1, EU14-CCRPLINTHTR-S1, EU11-FCCUCHARHTR-S1, EU04-VAC2HTR-S1, and EU77-DHTHTR-S1, and, in their shared stack, EU04-VACHTR-S1 and EU05-CRUDEHTR-S1. The permittee shall install and operate the CEMS in accordance with the requirements of 40 CFR §§60.11, 60.13, and Part 60, Appendix A, the applicable performance specification test of 40 CFR Part 60 Appendices B and F. With respect to 40 CFR Part 60 Appendix F, in lieu of the requirements of 40 CFR Part 60 Appendix F §§5.1.1, 5.1.3, and 5.1.4, the permittee shall conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) once every twelve (12) calendar quarters, provided that a Cylinder Gas Audit is conducted each calendar quarter. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report. **(R 336.1205, R 336.2802, 40 CFR 52.21)**
9. The permittee shall implement the EPA approved Alternate Monitoring Plan (AMP) for the Alky Unit Deethanizer off gas using hydrogen sulfide detector tubes as provided for in 40 CFR 60.13(i). **(40 CFR 60.104(a)(1), 40 CFR 60.13(i))**
10. The permittee shall implement the EPA approved Alternate Monitoring Plan (AMP) for the Propylene Unit Deethanizer off gas by daily using hydrogen sulfide detector tubes when it is being introduced directly into the refinery fuel gas system. **(40 CFR 60.104(a)(1), 40 CFR 60.13(i))**
11. The permittee shall monitor, in a satisfactory manner, the heat input for each heater in FG-HEATERS-S1, in MMBTU/hr, on a daily, monthly, and rolling 12-month time period basis. **(R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)**
12. The permittee shall keep daily records of the type and amount of fuel used in each heater/boiler in FGHEATERS-S1.<sup>2</sup> **(R 336.1901, 45 FR 29270)**
13. The permittee shall keep, in a satisfactory manner, records of NO<sub>x</sub> emissions on a monthly and a 12-month rolling basis for EU04-VACHTR-S1 and EU05-CRUDEHTR-S1 combined. **(R 336.2802), (40 CFR 52.21), (Consent Order No. 01-40119)**
14. The permittee shall keep, in a satisfactory manner, records of PM and CO emissions on a monthly and a 12-month rolling basis for EU71-H2HTR-S1. **(R 336.1910)**



15. The permittee shall keep, in a satisfactory manner, daily, monthly, and rolling 12-month time period records of the heat input for each heater in FG-HEATERS-S1, in MMBTU/hr, as required by SC VI.13. **(R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**

**See Appendix 3-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

## **VII. REPORTING**

1. The permittee shall submit the data on the concentration of hydrogen sulfide or total reduced sulfur in the refinery fuel gas burned in FGHEATERS-S1 to the Air Quality Division (AQD) District Supervisor in acceptable format within 30 days following the end of the quarter in which the data were collected. **(40 CFR 60.7)**

**See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

## **VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter/Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SV04-H1-05-H1 (EU04-VACHTR-S1 and EU05-CRUDEHTR-S1)	118 <sup>1</sup>	199 <sup>1</sup>	R 336.1225
2. SV08-H1 (EU08-GOHTCHARHTR-S1)	63 <sup>1</sup>	160 <sup>1</sup>	R 336.1225
3. SV09-H7 (EU09-ALKYDIBREBHTR-S1)	76 <sup>1</sup>	150 <sup>1</sup>	R 336.1225
4. SV11-H1 (EU11-FCCUCHARHTR-S1)	90 <sup>1</sup>	150 <sup>1</sup>	R 336.1225
5. SV14-H4A (EU14-CCRPLINTHTR-S1)	66 <sup>1</sup>	195 <sup>1</sup>	R 336.1225
6. SV14-H6 (EU14-CCRPLCHARHTR-S1)	84 <sup>1</sup>	195 <sup>1</sup>	R 336.1225
7. SV16-H3 (EU16-NHTSTRIPREBOIL-S1)	45 <sup>1</sup>	96.8 <sup>1</sup>	R 336.1225
8. SV16-H4 (EU16-NHTCHARHTR-S1)	56 <sup>1</sup>	91.7 <sup>1</sup>	R 336.1225
9. SV19-H2 (EU19-KHTCHARHTR-S1)	39 <sup>1</sup>	85.7 <sup>1</sup>	R 336.1225
10. SV22-1-H1 (EU22-FUELOILHTR-S1) (unobstructed vertical discharge not required)	NA	29.8 <sup>1</sup>	R 336.1225
11. SV04-H2 (EU04-VAC2HTR-S1)	125 <sup>1</sup>	96 <sup>1</sup>	R 336.1225
12. SV70-H1 (EU70-COKERHTR-S1)	150 <sup>1</sup>	112 <sup>1</sup>	R 336.1225
13. SV77-H1 (EU77-DHTHTR-S1)	125 <sup>1</sup>	60 <sup>1</sup>	R 336.1225
14. SV71-H2HTR (EU71-H2HTR-S1)	150 <sup>1</sup>	192 <sup>1</sup>	R 336.1225

## **IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all provision of the federal Standards of Performance of New Stationary Sources as specified in 40 CFR Part 60 Subparts A, J, and where applicable Ja, as they apply to FGHEATERS-S1. **(40 CFR Part 60 Subparts A & J/Ja)**
2. No later than 180 days after startup of the new DHT heater installed as part of the HOUP (EU77-DHTHTR-S1), the permittee shall cease operating the existing DHT heater (EU07-DHTCHARHTR). **(R 336.1205, R 336.2802, 40 CFR 52.21)**

3. On and after startup of the heavy oil upgrade project, the permittee shall not operate any emission unit in FG-HEATERS-S1 unless an acceptable plan that describes how emissions will be minimized during all startups, shutdowns, and malfunctions has been submitted to the AQD District Supervisor and the plan is being implemented, maintained, and followed.. The plan shall incorporate procedures recommended by the equipment manufacturer as well as standard industry practices. **(R 336.1205, R 336.1911, R 336.1912, R 336.2802, 40 CFR 52.21)**

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup>This condition is included at the request of the permittee.

**The following conditions apply to: FGFLARES-S1**

**DESCRIPTION:** All refinery flares. Four flares are subject to the NSR Consent Decree and subsequent revisions: EU-CRUDEFLARE-S1, EU-UNIFFLARE-S1, EU-ALKYFLARE-S1, and EU-CPFLARE-S1

**Emission Units:** EU-CRUDEFLARE-S1, EU-UNIFFLARE-S1, EU-ALKYFLARE-S1, EU-CPFLARE-S1, EU-COKERFLARE-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

1. There shall be no visible emissions from any flare in FGFLARES-S1 except for periods not to exceed a total of five minutes during any two consecutive hours. This requirement is based on the federal Standards of Performance for New Stationary Sources, 40 CFR 60.18(c)(1). <sup>2</sup> **(40 CFR Part 60 Subparts A and J)**

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. H <sub>2</sub> S in refinery fuel gas burned <sup>a,b</sup>	160 ppmv on a 3 hour rolling average basis <sup>2</sup>	Three hour rolling average	Each flare in FGFLARES-S1	SC VI.1	40 CFR60.103a(h)
<sup>a</sup> The combustion in a flare of process upset gases or fuel gas that is released to the flare as a result of relief valve leakage or other emergency malfunctions is exempt from this requirement. For flares equipped with flare gas recovery, the determination that a relief valve leakage or other emergency malfunction is exempt from this requirement will be based on the root cause analysis conducted in accordance with SC III.3, III.4, III.7, III.11, and III.12. <sup>b</sup> Permittee shall comply with this material limit and other applicable requirements of 40 CFR Part 60 Subparts A and Ja by June 30, 2016.					

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and J, as they apply to FGFLARES-S1. <sup>2</sup> **(R 336.1702, 40 CFR Part 60 Subparts A & J/Ja)**
2. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and CC, as they apply to FGFLARES-S1. <sup>2</sup> **(R 336.1702, 40 CFR Part 63 Subparts A and CC)**
3. The permittee shall conduct an event-specific investigation into each flaring incident that results in sulfur dioxide emissions greater than 500 pounds from FGFLARES-S1 in any 24-hour period. The investigation shall be performed in accordance with the requirements outlined in Special Condition III.11. The Permittee may rely on prior investigation reports for events that have the same or similar root causes. <sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, U.S. EPA Consent Order 01-40119)**
4. The permittee shall conduct an event-specific investigation into each flaring incident that results in sulfur dioxide or volatile organic compound emissions greater than 500 pounds from FGFLARES-S1 in any 24-hour period. The investigation shall be performed in accordance with the requirements outlined in Special Condition III.12. The Permittee may rely on prior investigation reports for events that have the same or similar root causes. <sup>3</sup> **(R 336.1201(3))**

5. The permittee shall maintain FGFLARES-S1 in good working order and in a manner consistent with good pollution control practices for minimizing emissions including during periods of startup, shutdown, and malfunction. Good air pollution control practice for FGFLARES-S1 shall include, at a minimum, development, implementation, and operation in accordance with an approved Sulfur Shedding Plan to minimize or prevent excess sulfur dioxide emissions from the Sulfur Recovery Units, Tail Gas Treating Units ("TGTUs"), and associated amine system. The Sulfur Shedding Plan shall have as a goal the elimination of flaring incidents in excess of 500 pounds of sulfur dioxide in any 24-hour period through the following.<sup>2</sup> **(R 336.1205, 40 CFR 60.11(d), U.S. EPA Consent Order 01-40119)**
- Define maintenance and operation practices for the new Sulfur Recovery Plants, the Tail Gas Treating Units ("TGTUs"), and amine system, and associated equipment in conjunction with this project. The plan should also evaluate and address any upstream process unit that has a direct impact on the operation and maintenance of the new Sulfur Recovery Plants, TGTUs, and Amine Systems.
  - Define good air pollution control practices to minimize the duration and amount of excess sulfur dioxide emissions from flaring events associated with the Sulfur Recovery Plants, TGTUs, and Amine Systems. The good pollution control practices shall include but not be limited to procedures to reduce excess sulfur dioxide emissions from a flaring incident through rate reduction or even shutdown of applicable process units associated with the flaring event. These practices should also entail operating measures and procedures to divert material being flared to other Sulfur Recovery Plants at the refinery.
  - Define measures to ensure continuous operation of the Sulfur Recovery Plants and Amine Systems between scheduled maintenance turnarounds. The measures shall include, but not be limited to, sulfur shedding procedures, adequate equipment redundancy, new startup and shutdown procedures, emergency procedures and schedules to coordinate maintenance turnarounds of the Sulfur Recovery Plants, TGTUs, and any supplemental control device to coincide with scheduled turnarounds of major upstream process units.
6. The permittee shall review and revise the Sulfur Shedding Plan on at least an annual basis to ensure it remains accurate.<sup>2</sup> **(40 CFR 60.11(d), U.S. EPA Consent Order 01-40119)**
7. The permittee shall conduct an event-specific investigation into each event that resulted in flaring more than 500,000 standard cubic feet of material in FGFLARES-S1 in any 24-hour period. The permitted pilot and sweep gas routed to the flares shall be excluded from the 500,000 standard cubic feet threshold. The investigation shall be performed in accordance with the requirements outlined in Special Condition III.11. The permittee may rely on prior investigation reports for events that have the same or similar root causes.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21)**
8. The permittee shall establish a tracking system for flaring incidents that result in emissions greater than 100 pounds but fewer than 500 pounds of VOC from FGFLARES-S1 in any 24-hour period. The permittee will take action to minimize the likelihood of recurrence of such incidents. After 28 instances of flaring events between 100 and 499 pounds of VOC within a consecutive twelve month period, permittee shall conduct an event-specific investigation into all such instances for the next six month period, at which point a new 12-month period for purposes of counting instances shall begin.<sup>3</sup> **(R 336.1201(3))**
9. The permittee shall prepare and follow a Flare Minimization Plan for FGFLARES-S1. The plan shall be designed and implemented to reduce or eliminate flaring events and shall include, at a minimum, the following elements.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21)**
- A description and technical information for each flare that includes:
    - Detailed process flow diagram accurately depicting all pipelines, process units, flare gas recovery systems, surge drums and knock-out pots, compressors and other equipment that vent to each flare. At a minimum, this shall include full and accurate as built dimensions and design capacities of the flare gas recovery systems, compressors, surge drums and knock-out pots.
    - Description of equipment, processes and procedures installed or implemented within the last five years to reduce flaring. The description shall specify the year of installation.
    - Description of any equipment, processes, or procedures the owner or operator plans to install or implement to eliminate or reduce flaring. The description shall specify the scheduled year of installation or implementation.
    - Description and evaluation of prevention measures to address the following:

1. Flaring that has occurred or reasonably may be expected to occur during planned major maintenance activities, including startup and shutdown. The evaluation shall include a review of flaring that has occurred during these activities in the past five years and shall consider the feasibility of performing these activities without flaring.
    2. Flaring that may reasonably be expected to occur due to issues of gas quantity and quality. The evaluation shall include an audit of the storage capacity available for excess vent gases, the scrubbing capacity available for vent gases including any limitations associated with scrubbing the vent gases for use as a fuel, and shall consider the feasibility of reducing flaring through the recovery, treatment, and use of the gas or other means.
    3. Flaring caused by the recent failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. The evaluation shall consider the adequacy of existing maintenance schedules and protocols for such equipment. For purposes of this section, a failure is recurrent if it occurs more than twice in any five year period as a result of the same causes as identified in the event-specific investigations.
  - b. A program of corrective action for malfunctioning process, air pollution control, and monitoring equipment related to the performance of FGFLARES-S1.
  - c. Procedures for conducting event-specific investigations as required by Conditions III.3 and III.7.
  - d. A determination of the appropriate steam to hydrocarbon ratio for each material for each flare, the basis for the ratios, and methods for estimating emissions from each flare, including when the steam to hydrocarbon ratios are not maintained at the appropriate level.
10. The permittee shall review and revise the Flare Minimization Plan on at least an annual basis to that ensure it remains current and complies with the provisions outlined in Special Condition III.9.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21)**
11. At a minimum, the permittee shall include all of the following specific information in the event-specific investigations for the reportable flaring events (i.e. greater than 500 pounds SO<sub>2</sub> or 500,000 scf of gas).<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, U.S. EPA Consent Order 01-40119)**
- a. The date and time that the flaring event started and ended.
  - b. The total quantity of gas flared during each event.
  - c. An estimate of the quantity of sulfur dioxide and VOC that was emitted and the calculations used to determine the quantities.
  - d. The steps taken to limit the duration of the flaring event or the quantity of emissions associated with the event.
  - e. A detailed analysis that sets forth the root cause and all significant contributing causes of the flaring event to the extent determinable.
  - f. An analysis of the measures, if any, available to reduce the likelihood of a recurrence of a flaring event resulting from the same root cause or significant contributing causes in the future.
  - g. A demonstration that the actions taken during the flaring event are consistent with the procedures specified in the Flare Minimization and Sulfur Shedding plans, as appropriate. If the actions taken during the flaring event are not consistent with the procedures specified in the appropriate plan, then the permittee must record the actions taken for that event and identify the reasons why the plan was not followed.
  - h. For any flaring event that lasts longer than 24 hours, each calendar day shall constitute a separate event.
12. At a minimum, the permittee shall include all of the following specific information in the event-specific investigations for the reportable flaring events (i.e. greater than 500 pounds SO<sub>2</sub> or VOC, or more than 500,000 scf of gas).<sup>3</sup> **(R 336.1201(3))**
- a. The date and time that the flaring event started and ended.
  - b. The total quantity of gas flared during each event.
  - c. An estimate of the quantity of sulfur dioxide and VOC that was emitted and the calculations used to determine the quantities.
  - d. The steps taken to limit the duration of the flaring event or the quantity of emissions associated with the event.

- e. A detailed analysis that sets forth the root cause and all significant contributing causes of the flaring event to the extent determinable.
  - f. An analysis of the measures, if any, available to reduce the likelihood of a recurrence of a flaring event resulting from the same root cause or significant contributing causes in the future.
  - g. A demonstration that the actions taken during the flaring event are consistent with the procedures specified in the Flare Minimization and Sulfur Shedding plans, as appropriate. If the actions taken during the flaring event are not consistent with the procedures specified in the appropriate plan, then the permittee must record the actions taken for that event and identify the reasons why the plan was not followed.
  - h. For any flaring event that lasts longer than 24 hours, each calendar day shall constitute a separate event.
13. The permittee shall complete each event-specific investigation report within 45 calendar days after the reportable flaring incident. <sup>2</sup> (R 336.1205, R 336.2802, 40 CFR 52.21, U.S. EPA Consent Order 01-40119)
14. The permittee shall operate each flare in FGFLARES-S1 in a satisfactory manner at all times that emissions may be vented to it, including maintaining an adequate steam to hydrocarbon ratio in each flare and a minimum heat content of 300 BTU/scf in the vent gas to each flare. <sup>2</sup> (R 336.1910, 40 CFR 60.18)

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall equip and maintain each flare in FGFLARES-S1 with a pilot flame. <sup>2</sup> (R 336.1910, 40 CFR Part 60 Subpart A, 40 CFR 63.11(b)(5))
2. Each flare in FGFLARES-S1 shall be designed and installed so that it complies with the requirements of 40 CFR Part 60 Subpart A. <sup>2</sup> (R 336.1910, 40 CFR 60.18(c))

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Within 180 days after commencement of trial operation of the heavy oil upgrade project, the permittee shall verify by testing, at the owner's expense, that each flare in FGFLARES-S1 is operating within the specified velocity and heat content limits specified within 40 CFR 60.18. No less than 60 days prior to testing, the Permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. (R 336.1910, 40 CFR 60.18)

**See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Permittee shall monitor and keep records of the concentration of hydrogen sulfide in the refinery fuel gas burned in each flare in accordance with the Federal Standards of Performance as specified in 40 CFR 60, Subpart J, in a manner and with instrumentation acceptable to the Division. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H<sub>2</sub>S in the fuel gas being burned. <sup>2</sup> (40 CFR 60.105(a)(4))
2. The permittee shall keep records of emissions and operating information for each flare in FGFLARES-S1 to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and J. <sup>2</sup> (40 CFR Part 60 Subparts A & J)
3. The permittee shall monitor emissions and operating and maintenance information for each flare in FGFLARES-S1 in accordance with the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and CC. <sup>2</sup> (40 CFR Part 63 Subparts A & CC)

4. The permittee shall keep records of emission information and operating and maintenance information for each flare in FGFLARES-S1 to comply with the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and CC. The permittee shall keep all source emissions and operating and maintenance information on file at the facility for a period of at least five years and make them available to the Department upon request. <sup>2</sup> **(40 CFR Part 63 Subparts A & CC)**
5. The permittee shall track and ensure timely closure of the corrective actions, if any, identified to minimize the likelihood of a recurrence of the reportable flaring events. Permittee shall report every six months on the status of the yet-to-be-completed corrective actions related to the reportable flaring incidents. <sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, U.S. EPA Consent Order 01-40119)**
6. The permittee shall keep, in a satisfactory manner, a record of the current and prior versions of the Sulfur Shedding Plan and the Flare Minimization Plan for FGFLARES-S1, as required by SC III.6 and III.10. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.2802, 40 CFR 52.21, U.S. EPA Consent Order 01-40119)**
7. The Permittee shall monitor all flares for visible emissions using color video monitors with date and time stamp. **(R 336.1205)**
8. The permittee shall calculate and keep records of the annual emissions of PM, PM<sub>10</sub>, NO<sub>x</sub>, VOC, CO, SO<sub>2</sub>, sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>), hydrogen sulfide (H<sub>2</sub>S), and Total Reduced Sulfur (TRS) from the Detroit heavy oil upgrade project (Detroit HOUP), in tons per year on a calendar year basis. Records shall be kept in the format described in Appendix B, or an alternate format acceptable to the AQD Permit Section Supervisor. Calculations and record keeping shall begin the month in which the Detroit HOUP begins normal operations and shall continue for 10 years. **(R 336.2818, 40 CFR 52.21(r)(6)(iii), 40 CFR Part 51 Appendix S)**
9. The permittee shall calculate, keep records of, and annually report to the AQD, the annual emissions of PM, PM<sub>10</sub>, NO<sub>x</sub>, VOC, CO, SO<sub>2</sub>, sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>), hydrogen sulfide (H<sub>2</sub>S), and Total Reduced Sulfur (TRS) from the Detroit heavy oil upgrade project (Detroit HOUP), in tons per year on a calendar year basis. Calculations shall be based on the best available and representative data. Supporting documentation shall be submitted with the emissions report, and shall be generally consistent with the format and specificity of Exhibit 7 of the Sierra Club Agreement. Records shall be kept in the format described in Appendix B, or an alternate format acceptable to the AQD Permit Section Supervisor. Calculations and record keeping shall begin the month in which the Detroit HOUP begins normal operations and shall continue for 10 years. <sup>3</sup> **(R 336.1201(3))**
10. The permittee shall install, maintain, and continuously operate, for EU-CRUDEFLARE-S1, EU-UNIFFLARE-S1, EU-ALKYFLARE-S1, and EU-CPFLARE-S1, continuous flow measuring devices to continuously monitor and record the flow of gas to each of these flares. The flow measuring devices shall be sensitive to rapid flow changes, and have the capability of reporting both instantaneous velocity and totalized flow. Materials exposed to the flare gas shall be corrosion resistant. The flow measuring devices shall (i) feature automated daily calibrations at low and high ranges, and (ii) shall signal alarms if the calibration error or drift is exceeded, provided that the monitor is equipped with such capability. The volumetric flow measuring devices may consist of one or more flow meters, and, as combined, shall meet the following specifications. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
  - a. Velocity Range: 0.1-250 ft/sec.
  - b. Repeatability: ± 1% of reading over the velocity range.
  - c. Accuracy: ± 20% of reading over the velocity range of 0.1-1 ft/s and ± 5% of reading over the velocity range of 1-250 ft/s.
  - d. Installation: Applicable AGA, ANSI, API, or equivalent standard.
  - e. Flow Rate Determination: Must be corrected to one atmosphere pressure and 68 °F and recorded as one-minute averages.
  - f. Data Records: Measured continuously and recorded over one minute averages. The instrument shall be capable of storing or transferring all data for later retrieval.
  - g. QA/QC: An annual verification of accuracy is required, and shall be specified by the manufacturer.

11. The permittee shall install, maintain, and continuously operate devices to continuously monitor and record the flow of steam to each flare in FGFLARES-S1, the VOC composition of the vent gas stream to each flare, and the steam to hydrocarbon ratio in each flare. The monitoring devices shall meet the following specifications. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
  - a. Turndown Ratio: 25:1.
  - b. Repeatability:  $\pm 1\%$  of reading over the range of the instrument.
  - c. Accuracy:  $\pm 1\%$  from 100% to 15 % of span,  $\pm 2\%$  from 15 % of span to 6 % of span,  $\pm 3\%$  from 6 % of span to 4% of span.
  - d. Installation: Applicable AGA, ANSI, API, or equivalent standard.
  - e. Flow Rate Determination: Must be corrected to one atmosphere pressure and 68 °F and recorded as one-minute averages.
  - f. Data Records: Measured continuously and recorded over one minute averages. The data acquisition system shall be capable of storing and transferring all data for later retrieval.
  - g. QA/QC: An annual verification of accuracy is required, and shall be specified by the manufacturer.
12. All data as generated by the flare and steam flow measuring devices shall be continuously recorded. The recording system(s) must have the capability to generate one-minute average data from that which is continuously generated by the flow measuring devices. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
13. The permittee shall maintain the flare and steam flow measuring devices and steam to hydrocarbon control system in good operating condition at all times when the flare that it serves is operational, except when out of service due to:
  - a. Breakdowns and unplanned system maintenance of each monitoring device shall not exceed 96 hours, cumulatively, per quarter for each reporting period; or,
  - b. Planned maintenance, which shall not exceed 14 days per 18 month period, provided that a written notification detailing the reason for maintenance and methods that will be used during the maintenance period to determine emissions associated with flare events is provided to the AQD District Supervisor prior to, or within 24 hours of, removal of the monitoring system from service. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
14. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the TRS concentration in the vent gas to each flare in FGFLARES-S1 on a continuous basis. **(R 336.1205, R 335.1224, R 336.1702, R 336.2802, 40 CFR 52.21)**
15. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a gas chromatography system to monitor and record the total hydrocarbon, methane, and TRS concentration in the vent gas to each flare in FGFLARES-S1 on a continuous basis.<sup>3</sup> **(R 336.1201(3))**
  - a. The gas chromatography system shall be maintained to be accurate within 5% of full scale.
  - b. The minimum sampling frequency shall be one sample every 30 minutes.

## **VII. REPORTING**

1. The permittee shall provide written notification of construction and operation of EU-COKERFLARE-S1 to comply with the federal Standards of Performance for New Stationary Sources, 40 CFR 60.7. The permittee shall submit this notification to the AQD District Supervisor within the time frames specified in 40 CFR 60.7.<sup>2</sup> **(40 CFR 60.7)**
2. The permittee shall submit a copy of the Sulfur Shedding and Flare Minimization Plans to the AQD District Supervisor for review at least 60 days before commencing operation of equipment associated with the heavy oil upgrade project.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, U.S. EPA Consent Order 01-40119)**
3. The permittee shall submit to the AQD District Supervisor an operations and maintenance (O&M) plan and a Flare Minimization Plan for each flare in FGFLARES-S1 at least 120 days before commencing operation of EU70-COKER-S1. At a minimum the O&M plan shall include an inspection schedule and description of inspection procedures for the flare components, including the flare tips and pilots.<sup>2</sup> **(40 CFR Part 63 Subparts A & CC)**



4. The permittee shall submit the data on the concentration of hydrogen sulfide in the refinery fuel gas burned in the flares to the AQD District Supervisor in an acceptable format within 30 days following the end of the quarter in which the records were collected.<sup>2</sup> **(40 CFR 60.105(a)(4))**
5. The permittee shall submit a semiannual summary of reportable flaring incidents to the AQD District Supervisor. Each report shall include, as a minimum, the number of reportable flaring incidents that occurred during the period, the amount of excess emissions during each reportable flaring incident, and the status of all yet-to-be-completed corrective actions from reportable flaring incidents. The permittee shall submit each report in an acceptable format within 30 days following the end of the semiannual period that the report covers.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21, U.S. EPA Consent Order 01-40119)**
6. The permittee shall submit the information required by SC VI.8 to the AQD Permit Section Supervisor within 60 days following the end of each reporting year if both the following occur for any of these pollutants:
  - a. The calendar year actual emission from the Detroit HOUP exceed the baseline actual emissions (BAE) by a significant amount, and
  - b. The calendar year actual emissions from the Detroit HOUP differ from the pre-construction projection for the emission units included in the Hybrid Applicability Test used for the Detroit HOUP. The pre-construction projection is the sum of the projected actual emissions from each emission unit using the actual-to-projected actual emissions test as part of the Hybrid Applicability Test, and the potential emissions from each emission unit using the potential-to-emit test as part of the Hybrid Applicability Test.

The report shall contain the name, address, and telephone number of the facility (major stationary source); the annual emissions as calculated pursuant to this SC, and any other information the owner or operator wishes to include (i.e., an explanation why emissions differ from the pre-construction projection). **(R 336.2818, 40 CFR 52.21(r)(6)(v))**
7. The permittee shall submit the information required by SC VI.8 to the AQD Permit Section Supervisor within 60 days following the end of each reporting year. The report shall contain the name, address, and telephone number of the facility (major stationary source); the annual emissions as calculated pursuant to this SC, and any other information the owner or operator wishes to include (i.e., an explanation why emissions differ from the pre-construction projection).<sup>3</sup> **(R 336.1201(3))**

#### **VIII. STACK/VENT RESTRICTION(S)**

NA

#### **IX. OTHER REQUIREMENT(S)**

1. NA

#### **Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup>This condition is included at the request of the permittee.

**The following conditions apply to: FGPROCVENTS-S1**

**DESCRIPTION:** Miscellaneous process vents subject to Refinery MACT 1 (40 CFR Part 63, Subpart CC)

**Emission Units:** EUVENT14SUMP-S1, EUVENT21XF-S1, EUVENT14XH-S1, EUVENT21V47-S1, EU21-S2OFFGAS-S1, EU09-VENT9V50-S1

**POLLUTION CONTROL EQUIPMENT:** Flare, FCCU Charge Heater

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

NA

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

See Appendices 3-S1, 4-S1, and 7-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

**VII. REPORTING**

NA

See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

**VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all applicable requirements of 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart A-General Provisions. **(40 CFR Part 63, Subpart A)**
2. Permittee shall comply with all applicable requirements of 40 CFR Part 63, Subpart CC-National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries. **(40 CFR Part 63, Subpart CC)**
3. The permittee for a Group 1 miscellaneous process vent as defined in 40 CFR 63.641 shall comply with the requirements of either paragraphs (a) or (b) as follows: **(40 CFR 63.643(a))**
  - a. Permittee shall reduce emissions of organic HAPs using a flare that meets the requirements of 40 CFR 63.11(b). Flares shall be operated at all times when emissions may be vented to them. **(40 CFR 63.643(a)(1))**
  - b. Permittee shall reduce emissions of organic HAPs, using a control device, by 98 percent or to a concentration of 20 parts per million by volume, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent. Compliance can be determined by measuring either organic HAPs or TOCs using the procedures in 40 CFR 63.645. **(40 CFR 63.643(a)(2))**
4. If a boiler or process heater is used to comply with the percentage of reduction requirement or concentration limit specified in paragraph 40 CFR 63.643(a)(2), then the vent stream shall be introduced into the flame zone of such a device, or in a location such that the required percent reduction or concentration is achieved. Testing and monitoring is required only as specified in 40 CFR 63.644(a) and 63.645. **(40 CFR 63.643(b))**

**Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: FGGROUP2-S1**

**DESCRIPTION:** 40 CFR 63 Subpart CC Group 2 Storage Tanks

**Emission Units:** EUTANK2-S1, EUTANK11-S1, EUTANK16-S1, EUTANK17-S1, EUTANK18-S1, EUTANK24-S1, EUTANK27-S1, EUTANK28-S1, EUTANK30-S1, EUTANK31-S1, EUTANK50-S1-S1, EUTANK52-S1, EUTANK54-S1, EUTANK56-S1, EUTANK59-S1, EUTANK60-S1, EUTANK62-S1, EUTANK63-S1, EUTANK64-S1, EUTANK70-S1, EUTANK71-S1, EUTANK100-S1, EUTANK102-S1, EUTANK103-S1, EUTANK104-S1, EUTANK105-S1, EUTANK106-S1, EUTANK107-S1, EUTANK120-S1, EUTANK125-S1, EUTANK126-S1, EUTANK127-S1, EUTANK128-S1, EUTANK314-S1, EUTANK315-S1, EUTANK316-S1, EUTANK317-S1, EUTANK318-S1, EUTANK319-S1, EUTANK320-S1, EUTANK324-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Sour kerosene	8400 barrels/day <sup>2</sup>	Based upon a monthly average	FGGROUP2-S1	SC VI.2	R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21
2. Sweet kerosene	8400 barrels/day <sup>2</sup>	Based upon a monthly average	FGGROUP2-S1	SC VI.2	R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21
3. Sour distillates	44,400 barrels/day <sup>2</sup>	Based upon a monthly average	FGGROUP2-S1	SC VI.2	R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21
4. Sweet distillates	44,400 barrels/day <sup>2</sup>	Based upon a monthly average	FGGROUP2-S1	SC VI.2	R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21
5. Sour gasoil	46,800 barrels/day <sup>2</sup>	Based upon a monthly average	FGGROUP2-S1	SC VI.2	R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21
6. Sweet gasoil	46,800 barrels/day <sup>2</sup>	Based upon a monthly average	FGGROUP2-S1	SC VI.2	R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

NA

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. For each Group 1 or Group 2 storage vessel, the permittee shall keep readily accessible records showing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel. This record shall be kept as long as the storage vessel retains Group 1 or Group 2 status and is in operation. (40 CFR 63.123(a), 40 CFR 63.655(i))
2. For each material stored in FGGROUP2-S1, the permittee shall keep monthly throughput records for FGGROUP2-S1. The permittee shall keep all records on file and make them available to the Department upon request. (R 336.1205, R 336.1702(a), R 336.2802, 40 CFR 52.21)
3. The permittee shall record the temperature of the stored product on a daily basis (alternative to true vapor pressure). (40 CFR 60.113)

See Appendices 4-S1 and 7-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

**VII. REPORTING**

NA

See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

**VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

1. The permittee comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and Subpart CC, as they apply to FGGROUP2-S1. (40 CFR Part 63 Subparts A & CC)
2. The permittee shall identify each storage tank subject to 40 CFR 63, Subpart CC requirements. (40 CFR 63.655(f)(1)(i)(A), 40 CFR 63.640)
3. The permittee shall comply with all applicable requirements of 40 CFR 63.640(l) for group 2 tanks that are converted to Group 1 tanks. (40 CFR 63.640(l))

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: FGIFRTANKS-S1**

**DESCRIPTION:** Internal floating roof tanks (IFR) that are subject to 40 CFR Part 63, Subpart CC as Group 1 Vessels or subject to 40 CFR 60, Subpart Kb. These tanks also may be subject to Michigan Air Pollution Control Rule 604 (R336.1604). This represents a consolidated requirement for internal floating roof tanks.

**Emission Units:** EUTANK19-S1, EUTANK23-S1, EUTANK40-S1, EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK49-S1, EUTANK51-S1, EUTANK52-S1, EUTANK53-S1, EUTANK55-S1, EUTANK57-S1, EUTANK58-S1, EUTANK61-S1, EUTANK72-S1, EUTANK79-S1, EUTANK101-S1, EUTANK104-S1, EUTANK116-S1, EUTANK118-S1, EUTANK120-S1, EUTANK135-S1, EUTANK507-S1, EUTANK508-S1, EUTANK216-S1

**POLLUTION CONTROL EQUIPMENT:** Internal Floating Roof

**I. EMISSION LIMITS**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. VOC	Maximum True Vapor Pressure of 11.0 psia <sup>2</sup>	Based upon Monthly average	FGIFRTANKS-S1	SC VI.1, VI.2	R 336.1225, R 336.1702

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

Requirements III.1 - III.3 apply to EUTANK19-S1, EUTANK23-S1, EUTANK40-S1, EUTANK49-S1, EUTANK51-S1, EUTANK53-S1, EUTANK57-S1, EUTANK79-S1, EUTANK101-S1, EUTANK104-S1, EUTANK116-S1, EUTANK118-S1, EUTANK120-S1, EUTANK135-S1, EUTANK508-S1, and EUTANK216-S1. (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112(b)(a)(1), 40 CFR 60.113(b)(a), 40 CFR Part 60 Subparts A and Kb)

1. Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112(b)(a)(1)(iv))
2. Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112(b)(a)(1)(v))
3. The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage vessel is completely emptied or subsequently emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112(b)(a)(1)(i))

Requirements III.4-III.6 apply to EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK55-S1, EUTANK58-S1, EUTANK61-S1, EUTANK72-S1, and EUTANK507-S1. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)

4. Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)
5. Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports<sup>2</sup>. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)
6. The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage vessel is completely emptied or subsequently emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Permittee shall comply with the applicable requirements of 40 CFR 60, Subpart Kb, section 60.113b (Testing and Procedures), except as provided for in Refinery MACT 1, for EUTANK19-S1, EUTANK23-S1, EUTANK40-S1, EUTANK49-S1, EUTANK51-S1, EUTANK53-S1, EUTANK57-S1, EUTANK79-S1, EUTANK101-S1, EUTANK104-S1, EUTANK116-S1, EUTANK118-S1, EUTANK120-S1, EUTANK135-S1, EUTANK508-S1, and EUTANK216-S1. (R 336.1205, R 336.1225, R 336.1702(b)), R 336.2802, 40 CFR 52.21, 40 CFR 60, Subpart Kb, Section 60.113b, 40 CFR 63, Subpart CC)
2. Permittee shall comply with the requirements of 40 CFR 60, Subpart Kb, section 60.113b (Testing and Procedures) that apply to tanks with internal floating roofs, except as provided for in Refinery MACT 1, for EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK55-S1, EUTANK58-S1, EUTANK61-S1, EUTANK72-S1, and EUTANK507-S1. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)

See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Permittee shall comply with the applicable requirements of 40 CFR 60, Subpart Kb, section 60.116b (Monitoring of Operations) for EUTANK19-S1, EUTANK23-S1, EUTANK40-S1, EUTANK49-S1, EUTANK51-S1, EUTANK53-S1, EUTANK57-S1, EUTANK79-S1, EUTANK101-S1, EUTANK104-S1, EUTANK116-S1, EUTANK118-S1, EUTANK120-S1, EUTANK135-S1, EUTANK508-S1, and EUTANK216-S1. (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60, Subpart Kb, Section 60.116b)

2. Permittee shall comply with the applicable requirements of 40 CFR 60, Subpart Kb, section 60.116b (Monitoring of Operations) for EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK55-S1, EUTANK58-S1, EUTANK61-S1, EUTANK72-S1, and EUTANK507-S1. For purposes of this requirement, the term "applicable requirements of 40 CFR 60, Subpart Kb, section 60.116b (Monitoring of Operations)" refers to those requirements that would apply to these tanks if the tanks were actually subject to 40 CFR Part 60, Subpart Kb. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**

**See Appendices 4-S1 and 7-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

## **VII. REPORTING**

NA

**See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

## **VIII. STACK/VENT RESTRICTION(S)**

NA

## **IX. OTHER REQUIREMENT(S)**

Requirements IX.1-IX.13 apply to EUTANK19-S1, EUTANK23-S1, EUTANK40-S1, EUTANK49-S1, EUTANK51-S1, EUTANK53-S1, EUTANK57-S1, EUTANK79-S1, EUTANK101-S1, EUTANK104-S1, EUTANK116-S1, EUTANK118-S1, EUTANK120-S1, EUTANK135-S1, EUTANK508-S1, and EUTANK216-S1. **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b)**

1. Each internal floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof:<sup>2</sup>
  - a. A foam or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal). A liquid-mounted seal means a foam- or liquid-filled seal mounted in contact with the liquid between the wall of the storage vessel and the floating roof continuously around the circumference of the tank.
  - b. Two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous.
  - c. A mechanical shoe seal. A mechanical shoe seal is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof. **(R 336.1205, R 336.1225, R336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(1)(ii))**
2. Each opening in a non-contact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(1)(iii))**
3. Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(1)(vi))**
4. Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(1)(viii))**
5. Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(1)(viii))**



6. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(1)(ix))**
7. Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to filling the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(a)(1))**
8. For Vessels equipped with a liquid-mounted or mechanical shoe primary seal, visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(a)(2))**
9. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the owner or operator shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected during inspections required in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, two 30 day extensions may be requested from the Administrator in the inspection report required in Sec. 60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(a)(3))**
10. For vessels equipped with a double-seal system, permittee must visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any) each time the storage vessel is emptied and degassed, or at least every 5 years; or visually inspect the IFR and the primary and secondary seal through the manhole and roof hatches at least once every 12 months after initial fill.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(a)(2))**
11. Visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years in the case of vessels conducting the annual visual inspection as specified in paragraphs 40 CFR 60.113b(a)(2) and (a)(3)(ii) and at intervals no greater than 5 years in the case of vessels specified in paragraph 40 CFR 60.113b (a)(3)(i).<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(a)(4))**
12. Notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraphs (a)(1) and (a)(4) of this section to afford the Administrator the opportunity to have an observer present.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(a)(5))**
13. If the inspection required by paragraph 40 CFR 60.113b(a)(4) is not planned and the owner or operator could not have known about the inspection 30 days in advance or refilling the tank, the owner or operator shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(a)(5))**

14. The permittee shall comply with all applicable provisions of 40 CFR 60, Subparts A and Kb. **(40 CFR 60, Subparts A and Kb)**

Requirements IX.15-IX.27 apply to EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK55-S1, EUTANK58-S1, EUTANK61-S1, EUTANK72-S1 and EUTANK507-S1.

15. Each internal floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof.<sup>2</sup>
- a. A foam- or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal). A liquid-mounted seal means a foam- or liquid-filled seal mounted in contact with the liquid between the wall of the storage vessel and the floating roof continuously around the circumference of the tank.
  - b. Two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous.
  - c. A mechanical shoe seal. A mechanical shoe seal is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
16. Each opening in a non-contact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
17. Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
18. Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
19. Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
20. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
21. Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to filling the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
22. For Vessels equipped with a liquid-mounted or mechanical shoe primary seal, visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
23. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the owner or operator shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected during inspections required in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, two 30-day extensions may be requested from the Administrator in the inspection report required in Sec. 60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.<sup>2</sup> **(R 336.1205, R 336.1225, R336.1702(a), R 336.2802, 40 CFR 52.21)**

24. For vessels equipped with a double-seal system, permittee must visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any) each time the storage vessel is emptied and degassed, or at least every 5 years; or visually inspect the IFR and the primary and secondary seal through the manhole and roof hatches at least once every 12 months after initial fill.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
25. Visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years in the case of vessels conducting the annual visual inspection as specified in paragraphs 40 CFR 60.113b(a)(2) and (a)(3)(ii) and at intervals no greater than 5 years in the case of vessels specified in paragraph 40 CFR 60.113b (a)(3)(i).<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
26. Notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraphs (a)(1) and (a)(4) of this section to afford the Administrator the opportunity to have an observer present.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**
27. If the inspection required by paragraph 40 CFR 60.113b(a)(4) is not planned and the owner or operator could not have known about the inspection 30 days in advance or refilling the tank, the owner or operator shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)**

Requirements IX.28-IX.30 apply to all tanks in FGIFRTANKS-S1.

28. The permittee shall comply with all applicable provisions of Rule 604, as they apply to FGIFRTANKS-S1.<sup>2</sup> **(R 336.1604)**
29. The permittee may utilize the provisions of 40 CFR 63, Subpart CC, Section 63.640(n) for storage vessels included in FGIFRTANKS-S1 (Overlap of subpart CC with other regulations for storage vessels).<sup>2</sup> **(40 CFR 63, Subpart CC, Section 63.640(n))**
30. The permittee shall comply with all provision of the federal Standards of Performance of New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Kb, as they apply to FGIFRTANKS-S1.<sup>2</sup> **(40 CFR 60, Subparts A and Kb)**

**Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: FGEFRTANKS-S1**

**DESCRIPTION:** This flexible group represents a consolidated requirement for external floating roof (EFR) tanks that are subject to 40 CFR Part 63, Subpart CC as Group 1 vessels or subject to 40 CFR 60, Subpart Kb. These tanks may also be subject to Michigan Air Pollution Control Rule 623 (R336.1623) and/or NSPS Subpart QQQ. This consolidated requirement basically adopts NSPS Kb for these EFR tanks.

**Emission Units:** EUTANK32-S1, EUTANK33-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, EUTANK128-S1, EUTANK129-S1, EUTANK130-S1, EUTANK601-S1, EU29TANK40-S1, EU29TANK41-S1

**POLLUTION CONTROL EQUIPMENT:** External Floating Roof

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

Requirements III.1-III.4 apply to EUTANK-129-S1, EUTANK601-S1, EU29TANK40-S1, and EU29TANK41-S1. (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(2))

1. Each external floating roof shall be equipped with a closure device between the wall of the storage vessel and the roof edge. The closure device is to consist of two seals, one above the other. The lower seal is referred to as the primary seal, and the upper seal is referred to as the secondary seal.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(2)(i))
2. The primary seal shall be either a mechanical shoe seal or a liquid-mounted seal. Except as provided in 40 CFR 60.113b(b)(4), the seal shall completely cover the annular space between the edge of the floating roof and tank wall. The secondary seal shall completely cover the annular space between the external floating roof and the wall of the storage vessel in a continuous fashion except as allowed in 40 CFR 60.113b(b)(4) [45-day repair requirement + two 30-day extensions].<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(2)(i)(A) and (B))
3. Except for automatic bleeder vents and rim space vents, each opening in a noncontact external floating roof shall provide a projection below the liquid surface. Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening in the roof is to be equipped with a gasket cover, seal, or lid that is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. Automatic bleeder vents are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports. Rim vents are to be set to open when the roof is being floated off the roof legs supports or at the manufacturer's recommended setting. Automatic bleeder vents and rim space vents are to be gasketed. Each emergency roof drain is to be provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(2)(ii))

- 4 The roof shall be floating on the liquid at all times (i.e., off the roof leg supports) except during initial fill until the roof is lifted off leg supports and when the tank is completely emptied and subsequently refilled. The process of filling, emptying, or refilling when the roof is resting on the leg supports shall be continuous and shall be accomplished as rapidly as possible.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.112b(a)(2)(iii))

Requirements III.5-III.8 apply to EUTANK32-S1, EUTANK33-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, and EUTANK130-S1. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)

5. Each external floating roof shall be equipped with a closure device between the wall of the storage vessel and the roof edge. The closure device is to consist of two seals, one above the other. The lower seal is referred to as the primary seal, and the upper seal is referred to as the secondary seal.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)
6. The primary seal shall be either a mechanical shoe seal or a liquid-mounted seal. Except as provided in 40 CFR 60.113b(b)(4), the seal shall completely cover the annular space between the edge of the floating roof and tank wall. The secondary seal shall completely cover the annular space between the external floating roof and the wall of the storage vessel in a continuous fashion except as allowed in 40 CFR 60.113(b)(4) [45-day repair requirement + two 30-day extensions].<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)
7. Except for automatic bleeder vents and rim space vents, each opening in a noncontact external floating roof shall provide a projection below the liquid surface. Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening in the roof is to be equipped with a gasket cover, seal, or lid that is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. Automatic bleeder vents are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports. Rim vents are to be set to open when the roof is being floated off the roof legs supports or at the manufacturer's recommended setting. Automatic bleeder vents and rim space vents are to be gasketed. Each emergency roof drain is to be provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)
8. The roof shall be floating on the liquid at all times (i.e., off the roof leg supports) except during initial fill until the roof is lifted off leg supports and when the tank is completely emptied and subsequently refilled. The process of filling, emptying, or refilling when the roof is resting on the leg supports shall be continuous and shall be accomplished as rapidly as possible.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Permittee shall comply with the applicable requirements of 40 CFR 60, Subpart Kb, section 60.113b (Testing and Procedures), except as provided for in Refinery MACT 1, for EUTANK129-S1, EUTANK601-S1, EU29TANK40-S1, and EU29TANK41-S1.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60, Subpart Kb, Section 60.113b, 40 CFR 63 Subpart CC)

2. Permittee shall comply with the applicable requirements of 40 CFR 60, Subpart Kb, section 60.113b (Testing and Procedures), except as provided for in Refinery MACT 1, for EUTANK32-S1, EUTANK33-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, and EUTANK130-S1. For purposes of this requirement, the term "applicable requirements of 40 CFR 60, Subpart Kb, section 60.113b (Testing and Procedures), except as provided for in Refinery MACT 1" refers to those requirements that would apply to these tanks if the tanks were actually subject to 40 CFR Part 60, Subpart Kb.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)

See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Permittee shall comply with the applicable requirements of 40 CFR 60, Subpart Kb, section 60.116b (Monitoring of Operations) for EUTANK129-S1, EUTANK601-S1, EU29TANK40-S1, and EU29TANK41-S1. (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60, Subpart Kb, Section 60.116b)
2. Permittee shall comply with the requirements of 40 CFR 60, Subpart Kb, section 60.116b (Monitoring of Operations) that apply to tanks with external floating roofs, for EUTANK32-S1, EUTANK33-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, and EUTANK130-S1. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21)

See Appendices 4-S1 and 7-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

#### **VII. REPORTING**

NA

See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

#### **VIII. STACK/VENT RESTRICTION(S)**

NA

#### **IX. OTHER REQUIREMENT(S)**

Requirements IX.1-IX.8 apply to EUTANK129-S1, EUTANK601-S1, EU29TANK40-S1, and EU29TANK41-S1. (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b), 40 CFR Part 60 Subparts A and Kb)

1. Permittee shall determine the gap areas and maximum gap widths, between the primary seal and the wall of the storage vessel and between the secondary seal and the wall of the storage vessel according to the following frequency.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(1))
  - a. Measurements of gaps between the tank wall and the primary seal (seal gaps) shall be performed during the hydrostatic testing of the vessel or within 60 days of the initial fill with VOL and at least once every 5 years thereafter. (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(1)(i))
  - b. Measurements of gaps between the tank wall and the secondary seal shall be performed within 60 days of the initial fill with VOL and at least once per year thereafter. (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(1)(ii))

- c. If any source ceases to store VOL for a period of 1 year or more, subsequent introduction of VOL into the vessel shall be considered an initial fill for the purposes of paragraphs 40 CFR 60.113b(b)(1)(i) and (b)(1)(ii). **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(1)(iii))**
2. Permittee shall determine gap widths and areas in the primary and secondary seals individually by the following procedures:<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(2))**
  - a. Measure seal gaps, if any, at one or more floating roof levels when the roof is floating off the roof leg supports. **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(2)(i))**
  - b. Measure seal gaps around the entire circumference of the tank in each place where a 0.32-cm diameter uniform probe passes freely (without forcing or binding against the seal) between the seal and the wall of storage vessel and measure the circumferential distance of each such location. **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(2)(ii))**
  - c. The total surface area of each gap described in paragraph (b)(2)(ii) of this section shall be determined by using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance. **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(2)(iii))**
3. Permittee shall add the gap surface area of each gap location for the primary seal and the secondary seal individually and divide the sum for each seal by the nominal diameter of the tank and compare each ratio to the respective standards in paragraph 40 CFR 60.113b(b)(4).<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(3))**
4. Permittee shall make necessary repairs or empty the storage vessel within 45 days of identification in any inspection for seals not meeting the following requirements<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(4))**
  - a. The accumulated area of gaps between the tank wall and the mechanical shoe or liquid-mounted primary seal shall not exceed 212 cm<sup>2</sup> per meter of tank diameter, and the width of any portion of any gap shall not exceed 3.81 cm. (A) One end of the mechanical shoe is to extend into the stored liquid, and the other end is to extend a minimum vertical distance of 61 cm above the stored liquid surface. (B) There are to be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope. **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(4)(i))**
  - b. The secondary seal is to meet the following requirements: (A) The secondary seal is to be installed above the primary seal so that it completely covers the space between the roof edge and the tank wall except as provided in paragraph 40 CFR 60.113b(b)(2)(iii). (B) The accumulated area of gaps between the tank wall and the secondary seal shall not exceed 21.2 cm<sup>2</sup> per meter of tank diameter, and the width of any portion of any gap shall not exceed 1.27 cm. (C) There are to be no holes, tears, or other openings in the secondary seal or seal fabric. **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(4)(ii))**
  - c. If a failure that is detected during inspections required in paragraph 40 CFR 60.113b(b)(1) cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, two 30-day extensions may be requested from the Administrator in the inspection report required in 40 CFR 60.115(b)(4). Such extension request must include a demonstration of unavailability of alternate storage capacity and a specification of a schedule that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible. **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(4)(iii))**
5. Permittee shall notify the Administrator 30 days in advance of any gap measurements required by paragraph 40 CFR 60.113b(b)(1) to afford the Administrator the opportunity to have an observer present.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(5))**
6. Permittee shall visually inspect the external floating roof, the primary seal, secondary seal, and fittings each time the vessel is emptied and degassed.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(6))**

7. If the external floating roof has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, the permittee shall repair the items as necessary so that none of the conditions specified in this paragraph exist before filling or refilling the storage vessel with VOL.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(6)(i))
8. For all the inspections required by paragraph 40 CFR 60.113b(b)(6), the permittee shall notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel to afford the Administrator the opportunity to inspect the storage vessel prior to refilling. If the inspection required by paragraph 40 CFR 60.113b(b)(6) is not planned and the permittee could not have known about the inspection 30 days in advance of refilling the tank, the permittee shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(b), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(6)(ii))

Requirements IX.9-IX.16 apply to EUTANK32-S1, EUTANK33-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, and EUTANK130-S1. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b))

9. Permittee shall determine the gap areas and maximum gap widths, between the primary seal and the wall of the storage vessel and between the secondary seal and the wall of the storage vessel according to the following frequency<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(1))
- a. Measurements of gaps between the tank wall and the primary seal (seal gaps) shall be performed during the hydrostatic testing of the vessel or within 60 days of the initial fill with VOL and at least once every 5 years thereafter. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(1)(i))
  - b. Measurements of gaps between the tank wall and the secondary seal shall be performed within 60 days of the initial fill with VOL and at least once per year thereafter. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(1)(ii))
  - c. If any source ceases to store VOL for a period of 1 year or more, subsequent introduction of VOL into the vessel shall be considered an initial fill for the purposes of paragraphs 40 CFR 60.113b(b)(1)(i) and (b)(1)(ii). (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(1)(iii))
10. Permittee shall determine gap widths and areas in the primary and secondary seals individually by the following procedures<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(2))
- a. Measure seal gaps, if any, at one or more floating roof levels when the roof is floating off the roof leg supports. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(2)(i))
  - b. Measure seal gaps around the entire circumference of the tank in each place where a 0.32-cm diameter uniform probe passes freely (without forcing or binding against the seal) between the seal and the wall of storage vessel and measure the circumferential distance of each such location. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(2)(ii))
  - c. The total surface area of each gap described in paragraph (b)(2)(ii) of this section shall be determined by using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance. (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(2)(iii))
11. Permittee shall add the gap surface area of each gap location for the primary seal and the secondary seal individually and divide the sum for each seal by the nominal diameter of the tank and compare each ratio to the respective standards in paragraph 40 CFR 60.113b(b)(4).<sup>2</sup> (R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(3))



12. Permittee shall make necessary repairs or empty the storage vessel within 45 days of identification in any inspection for seals not meeting the following requirements<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(4)):**
- a. The accumulated area of gaps between the tank wall and the mechanical shoe or liquid-mounted primary seal shall not exceed 212 cm[2] per meter of tank diameter, and the width of any portion of any gap shall not exceed 3.81 cm. (A) One end of the mechanical shoe is to extend into the stored liquid, and the other end is to extend a minimum vertical distance of 61 cm above the stored liquid surface. (B) There are to be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(4)(ii))**
  - b. The secondary seal is to meet the following requirements: (A) The secondary seal is to be installed above the primary seal so that it completely covers the space between the roof edge and the tank wall except as provided in paragraph 40 CFR 60.113b(b)(2)(iii). (B) The accumulated area of gaps between the tank wall and the secondary seal shall not exceed 21.2 cm[2] per meter of tank diameter, and the width of any portion of any gap shall not exceed 1.27 cm. (C) There are to be no holes, tears, or other openings in the secondary seal or seal fabric. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(4)(ii))**
  - c. If a failure that is detected during inspections required in paragraph 40 CFR 60.113b(b)(1) cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, two 30-day extensions may be requested from the Administrator in the inspection report required in 40 CFR 60.115(b)(4). Such extension request must include a demonstration of unavailability of alternate storage capacity and a specification of a schedule that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(4)(iii))**
13. Permittee shall notify the Administrator 30 days in advance of any gap measurements required by paragraph 40 CFR 60.113b(b)(1) to afford the Administrator the opportunity to have an observer present.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(5))**
14. Permittee shall visually inspect the external floating roof, the primary seal, secondary seal, and fittings each time the vessel is emptied and degassed.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(6))**
15. If the external floating roof has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, the permittee shall repair the items as necessary so that none of the conditions specified in this paragraph exist before filling or refilling the storage vessel with VOL.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(6)(i))**
16. For all the inspections required by paragraph 40 CFR 60.113b(b)(6), the permittee shall notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel to afford the Administrator the opportunity to inspect the storage vessel prior to refilling. If the inspection required by paragraph 40 CFR 60.113b(b)(6) is not planned and the permittee could not have known about the inspection 30 days in advance of refilling the tank, the permittee shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.<sup>2</sup> **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60.113b(b)(6)(ii))**

Requirements IX.17-IX.19 apply to all tanks in FGEFRTANKS-S1. **(R 336.1623, 40 CFR 63.640(n))**

17. The permittee shall comply with all applicable provisions of Rule 623, as they apply to FGEFRTANKS-S1. **(R 336.1623)**
18. The permittee may utilize the provisions of 40 CFR 63, Subpart CC, Section 63.640(n) for storage vessels included in FG-EFRTANKS (Overlap of subpart CC with other regulations for storage vessels). **(40 CFR 63, Subpart CC, Section 63.640(n))**

19. The permittee shall comply with all provision of the federal Standards of Performance of New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Kb, as they apply to FGEFRTANKS-S1.  
**(40 CFR 60, Subparts A and Kb)**
20. The permittee shall document it's current storage tank inspection and maintenance protocol. The protocol shall include provisions to increase inspection frequency on the storage tanks during winter months and to winterize the storage tank roof drains seasonally.<sup>3</sup> **(R 336.1201(3))**

**Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup> This condition is included at the request of the permittee.

**The following conditions apply to: FG29-IGF-S1**

**DESCRIPTION:** Two induced gas floatation units which are part of the wastewater treatment plant and are covered by permit 190-00A

**Emission Units:** EU29-IGF1-S1, EU29-IGF2-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. VOC	8.41 Tons/Year <sup>2</sup>	Based upon a 12-month rolling time period.	FG29-IGF-S1	SC VI.3	R 336.1702(a), R 336.1225

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The wastewater throughput for FG29-IGF-S1 shall not exceed 1,682,000,000 gallons per 12-month rolling time period as determined at the end of each calendar month.<sup>2</sup> (R 336.1225, R 336.1702(a))
2. Permittee shall not operate EU29-IGF1-S1 or EU29-IGF2-S1 unless the fixed roofs and conservation vent for the emission unit are installed and operating properly.<sup>2</sup> (R 336.1225, R 336.1702(a), R 336.1910)
3. The pressure setting on decant vessel conservation vents in FG29-IGF-S1 shall be equal to or greater than 2.0 pounds per square inch gauge.<sup>2</sup> (R 336.1225, R 336.1702(a), R 336.1910)

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

**See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall monitor the pressure setting on each decant vessel conservation vent in a manner and with instrumentation acceptable to the Division.<sup>2</sup> (R 336.1225, R 336.1702(a), R 336.1910)
2. Permittee shall continuously monitor the wastewater throughput for FG29-IGF-S1 in a manner and with instrumentation acceptable to the Division.<sup>2</sup> (R 336.1225, R 336.1702(a), R 336.1910)

3. Permittee shall maintain the following written records for FG29-IGF-S1: **(R 336.1225, R 336.1702(a), R 336.1910)**
- A record of monthly wastewater throughputs as determined at the end of each calendar month.
  - A record of monthly VOC emission rate including the 12-month rolling time period emission rate.
  - A record demonstrating the calculations used to determine the VOC emission rate.
  - Once every shift, the permittee shall record the pressure setting for each decant vessel conservation vent. Pressure setting shall mean Nitrogen pressure on the valve.
  - Once every shift, the permittee shall record the position of each decant vessel conservation vent valve

## **VII. REPORTING**

NA

See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

## **VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter/Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SV29-IGF1	6 <sup>1</sup>	20 <sup>1</sup>	R 336.1225
2. SV29-IGF2	6 <sup>1</sup>	20 <sup>1</sup>	R 336.1225

## **IX. OTHER REQUIREMENT(S)**

- The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 61 Subparts A and FF, as they apply to FG29-IGF-S1.  
**(40 CFR Part 61, Subparts A & FF)**
- The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and CC, as they apply to FG29-IGF-S1.  
**(40 CFR Part 63, Subparts A & CC)**

### **Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: FGPROCUNITS-S1**

**DESCRIPTION:** Process groups subject to leak detection and repair requirements (LDAR). This flexible grouping is subject to the consolidated LDAR requirements of 40 CFR 60, Subparts VV or VVa; 40 CFR 60, Subparts GGG or GGGa; 40 CFR 63, Subpart CC as listed in Section V and VI of this table. For the purpose of this consolidated LDAR requirement the following are affected facilities: (1) compressors and (2) the group of all equipment {see definition in 40 CFR 60.591} within a process unit.

**Emission Units:** EU04VACUUM-S1, EU05-CRUDE-S1, EU07-DHT-S1, EU08-GOHT-S1, EU09-ALKYLATION-S1, EU11-FCCU-S1, EU12-GASCON-S1, EU13-PROPYLENE-S1, EU14-CCRPLATFORMER-S1, EU16-NAPHHYTREAT-S1, EU19-KEROHYTREAT-S1, EU21-CPTREATER-S1, EU22-TANKFARMS-S1, EU22-LPGRAILRACK-S1, EU29-WASTEWATER-S1, EU38-ROUGETERMNL-S1, EU42-43SULRECOV-S1, EU99-LPGLOADRACK-S1, EU-41SOURWATER-S1, EU22-ASPHLOAD-S1, EU70-COKER-S1, EU71-H2PLANT-S1, EU72-SULRBLOCK2-S1, EU73-SOURWATER2-S1, EU77-DHHTYTREAT-S1, EU76-UTILITIES-S1, EU78-FUELGASRECOVERY-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

1. For all pumps, a leak shall be defined as an instrument reading of 2,000 ppm or greater, as specified in NSPS Subpart VVa. **(Consent Order No. 01-40119, 40 CFR Part 60 Subpart GGGa)**
2. For valves in gas/vapor or light liquid service: A leak shall be defined as an instrument reading of 500 ppm or greater, as specified in NSPS Subpart VVa. **(Consent Order No. 01-40119, 40 CFR Part 60 Subpart GGGa)**

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. Permittee shall not cause or allow the emission of any volatile organic compound from any existing component, as listed in R336.1622(2), of a petroleum refinery, including topping plants, unless all applicable provisions of 40 CFR 60.590 to 60.593 (2000), standards of performance for equipment leaks of volatile organic compound in petroleum refineries, are implemented. NOTE: The following more stringent leak definitions shall be implemented: **(R 336.1622(1), 40 CFR Part 60 Subpart GGGa)**
  - a. Pumps 2,000 ppm instead of 10,000 ppm
  - b. Valves in gas/vapor or light liquid service 500 ppm instead of 10,000 ppm
2. The permittee shall not operate the Coker wet gas compressor (70C1) unless the compressor seal vent emissions are routed to a flare for destruction. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall comply with the provisions of 40 CFR 60.485 and 40 CFR 60.485a as applicable except as provided in 40 CFR 60.593 and 40 CFR 60.593a. **(R 336.1622(1), 40 CFR 60.592(d))**

**See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall comply with the requirements of 40 CFR 60.486, 486a, 487, and 487a as applicable. **(R 336.1622(1), 40 CFR 60.592(e))**

**See Appendices 4-S1 and 7-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VII. REPORTING**

NA

**See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

1. Permittee may apply to the EPA Administrator for a determination of equivalency for any means of emission limitation that achieves a reduction in emissions of VOC at least equivalent to the reduction in emission of VOC achieved by the controls required in 40 CFR 60, Subpart GGG or GGGa. In doing so, the permittee shall comply with the requirements of 40 CFR 60.484 or 40 CFR 60.484a. **(R 336.1622(1), 40 CFR 60.592(c))**
2. The permittee subject to the provisions of subpart GGG or GGGa may comply with the following exemptions/provisions: **(40 CFR 60.593, 40 CFR 60.593a)**
  - a. Compressors in hydrogen service are exempt from the requirements of 40 CFR 63.648 (a) and (c) /if the permittee demonstrates that a compressor is in hydrogen service. **(40 CFR 60.593(b)(1), 40 CFR 60.593a(b)(1))**
  - b. Each compressor is presumed not to be in hydrogen service unless permittee demonstrates that the piece of equipment is in hydrogen service. For a piece of equipment to be considered in hydrogen service, it must be determined that the percentage hydrogen content can be reasonably expected always to exceed 50 percent by volume. For purposes of determining the percentage hydrogen content in the process fluid that is contained in or contacts a compressor, procedures that conform to the general method described in ASTM E260-73, 91 or 96, E168-67, 77, or 92, or E169-63, 77, or 93 shall be used (incorporated by reference as specified in 40 CR 60.17). [ASTM E260 is "Standard Practices for Packed Column Gas Chromatography"; ASTM E168 is "Standard Practices for General Techniques of Infrared Quantitative Analysis"; E169 is "Standard Practices for General Techniques of Ultraviolet – Visible Quantitative Analysis". **(40 CFR 60.593(b)(2), 40 CFR 60.593a(b)(2)) (40 CFR 63.648(g)(2)(i)(A))**

- c. Permittee may use engineering judgment rather than procedures in paragraph (b) of this condition to demonstrate that the percent content exceeds 50 percent by volume, provided the engineering judgment demonstrates that the content clearly exceeds 50 percent by volume. When the permittee and the Administrator do not agree on whether a piece of equipment is in hydrogen service, the procedures in paragraph (b) shall be used to resolve the disagreement. **(40 CFR 60.593(b)(3)(i), 40 CFR 60.593a(b)(3)(ii))**
  - d. If the permittee determines that a piece of equipment is in hydrogen service, the determination can be revised only by following the procedures in paragraph (b) of this condition. **(40 CFR 60.593(b)(3)(ii), 40 CFR 60.593a(b)(3)(ii))**
  - e. Permittee may use the following provision in addition to 40 CFR 60.485(e) or 40 CFR 60.485a(e): Equipment is in light liquid service if the percent evaporated is greater than 10 percent at 150°C as determined by ASTM Method D86-78, 82, 90, 95, or 96 (incorporated by reference as specified in 40 CFR 60.18). **(40 CFR 60.593(d), 40 CFR 60.593a(d))**
  - f. Calculation of percentage leaking equipment components for subpart VV or VVa of 40 CFR 60 may be done on a process unit basis or a sourcewide basis. Once the permittee has decided, all subsequent calculations shall be on the same basis unless a permit change is made. **(40 CFR 63.648(a)(2))**
  - g. Reciprocating pumps in light liquid service are exempt from 40 CFR 60.482 and 40 CFR 60.482a if recasting the distance piece or reciprocating pump replacement is required. **(40 CFR 63.648(f))**
  - h. Reciprocating compressors are exempt from seal requirements if recasting the distance piece or compressor replacement is required. **(40 CFR 63.648(i))**
3. The permittee shall comply with the applicable requirements of 40 CFR Part 60, Subpart GGGa as soon as practicable after startup of the heavy oil upgrade project. **(R 336.1622(1), 40 CFR 60.592(a), 40 CFR Part 60 Subpart GGGa)**
  4. The permittee may elect to comply with the requirements of 40 CFR 60.483-1 and 483-2. **(R 336.1622(1), 40 CFR 60.592(b))**
  5. Compliance with Conditions III.1, VI.1, VI.1, and IX.1-IX.4 shall be considered compliance with Michigan Air Pollution Control Rule R336.1622 and the equipment leak standards in 40 CFR Part 63, Subpart CC-National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries. **(40 CFR 63 Subpart CC)**
  6. The permittee shall comply with all applicable provisions of the following regulations: 40 CFR 60, Subpart VVa and Subpart GGGa: **R 336.1205, R 336.1225, R 336.1226(d), R 336.1702(a), R 336.2802, 40 CFR 52.21, 40 CFR 60, Subparts A, VVa, and GGGa)**
    - a. Pumps 2,000 ppm
    - b. Valves in gas/vapor or light liquid service 500 ppm
  7. The permittee shall implement a program to monitor at least 90% of the flanges and connectors in gas/vapor and light liquid VOC service in the following emission units: EU70-COKER-S1, EU71-H2PLANT-S1, EU72-SULRBLOCK2-S1, EU73-SOURWATER2-S1, EU77-DHHTHTREAT-S1, EU22-TANKFARMS, EU76-UTILITIES-S1, and EU78-FUELGASRECOVERY-S1. The program shall meet the following requirements. **(R 336.1205, R 336.1225, R 336.1226(d), R 336.1702(a), R 336.2802, 40 CFR 52.21)**
    - a. Monitoring shall be conducted on a quarterly basis, using test methods and procedures described in Appendix 1.5, Section D of RO Permit 199700013c.
    - b. A leak shall be defined as an instrument reading of 500 ppm or greater, as specified in NSPS Subpart VVa.
    - c. Flanges and connectors may be excluded from the monitoring program if they are "unsafe to monitor" as defined in 40 CFR 60.482-7(g)(1), or "difficult to monitor" as defined in 40 CFR 60.482-7(h)(1).
    - d. Permittee shall maintain records utilizing the procedures in Appendix 1.4, Section E, of RO permit 199700013c.
  8. The permittee shall implement a program to monitor at least 50% of the flanges and connectors in gas/vapor and light liquid VOC service in the following emission units: EU04-VACUUM, EU05-CRUDE, EU08-GOHT, EU16-NAPHHYTREAT, EU19-KEROHYTREAT, EU14-CCRPLATFORMER, and EU21-CPTREATER. The program shall meet the following requirements. **(R 336.1205, R 336.1225, R 336.1226(d), R 336.1702(a), R 336.2802)**

- a. Monitoring shall be conducted on a quarterly basis, using test methods and procedures described in Appendix 1.5, Section D of RO Permit 199700013c.
  - b. A leak shall be defined as an instrument reading of 500 ppm or greater, as specified in NSPS Subpart VVa.
  - c. Flanges and connectors may be excluded from the monitoring program if they are "unsafe to monitor" as defined in 40 CFR 60.482-7(g)(1), or "difficult to monitor" as defined in 40 CFR 60.482-7(h)(1).
  - d. Permittee shall maintain records utilizing the procedures in Appendix 1.4, Section E, of RO permit 199700013c.
9. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A, VV, GGG, and GGGa, as they apply to FGPROCUNITS-S1. **(40 CFR 60, Subparts A, VV, GGG, and GGGa)**
10. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and CC, as they apply to FGPROCUNITS-S1. **(40 CFR 63, Subparts A and CC)**

**Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).



**The following conditions apply to: FGCRUDETANKS-S1**

**DESCRIPTION:** External floating roof (EFR) tanks that are subject to 40 CFR Part 63, Subpart CC as Group 1 Vessels or subject to 40 CFR 60, Subpart Kb. These tanks may also be subject to Michigan Air Pollution Control Rule 623 (R336.1623) and/or NSPS Subpart QQQ. This consolidated requirement basically adopts NSPS Kb for these EFR tanks.

**Emission Units:** EUTANK112-S1, EUTANK113-S1, EUTANK114-S1, EUTANK115-S1, EUTANK129-S1, EUTANK130-S1

**POLLUTION CONTROL EQUIPMENT:** External Floating Roof

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Crude Oil	140,000 barrels per day <sup>2</sup>	Based upon an annual average	FGCRUDETANKS-S1	SC VI.3	R 336.1225

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

NA

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall maintain each storage tank in FGCRUDETANKS-S1 with the following equipment, or a deck and seal configuration that results in the same or lower VOC emissions from the tanks: **(40 CFR 52.21 (a) & (b))**
  - a. floating roof
  - b. welded deck
  - c. mechanical shoe primary seal
  - d. rim-mounted secondary seal

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall perform inspections and monitor operating information for FGCRUDETANKS-S1 in accordance with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A & Kb. **(40 CFR Part 60 Subparts A & Kb)**

2. The permittee shall keep records of inspections and operating information for FGCRUDETANKS-S1 in accordance with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A & Kb. The permittee shall keep all records on file and make them available to the Department upon request. **(40 CFR Part 60 Subparts A & Kb)**
3. The permittee shall keep annual VOC emission calculations and monthly throughput records for FGCRUDETANKS-S1. The permittee shall keep all records on file and make them available to the Department upon request.<sup>2</sup> **(R 336.1225, 40 CFR 52.21 (a) & (b))**

## **VII. REPORTING**

NA

See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a

## **VIII. STACK/VENT RESTRICTION(S)**

NA

## **IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Kb as they apply to FGCRUDETANKS-S1. **(40 CFR 60 Subparts A & Kb)**

### **Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: FGNAPHTHATANKS-S1**

**DESCRIPTION:** This flexible group represents a consolidated requirement for internal and external floating roof tanks that are subject to 40 CFR Part 63, Subpart CC as Group 1 Vessels or subject to 40 CFR 60, Subpart Kb. These tanks may also be subject to Michigan Air Pollution Control Rule 623 (R336.1623) and/or NSPS Subpart QQQ. This consolidated requirement basically adopts NSPS Kb for these tanks.

**Emission Units:** EUTANK19-S1, EUTANK40-S1, EUTANK45-S1, EUTANK46-S1, EUTANK47-S1, EUTANK48-S1, EUTANK49-S1, EUTANK53-S1, EUTANK55-S1, EUTANK57-S1, EUTANK58-S1, EUTANK61-S1, EUTANK72-S1, EUTANK101-S1, EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, EUTANK116-S1, EUTANK118-S1, EUTANK128-S1, EUTANK104-S1, EUTANK120-S1, EUTANK79-S1, EUTANK135-S1

**POLLUTION CONTROL EQUIPMENT:** Internal Floating Roofs, External Floating Roofs

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NHT Charge	38,400 barrels per day <sup>2</sup>	Based upon a monthly average	FGNAPHTHATANKS-S1	SC VI.3	R 336.1225
2. Sweet Naphtha	38,400 barrels per day <sup>2</sup>	Based upon a monthly average	FGNAPHTHATANKS-S1	SC VI.3	R 336.1225
3. Reformate Naphta	24,000 barrels per day <sup>2</sup>	Based upon a monthly average	FGNAPHTHATANKS-S1	SC VI.3	R 336.1225
4. FCCU Naphtha	30,420 barrels per day <sup>2</sup>	Based upon a monthly average	FGNAPHTHATANKS-S1	SC VI.3	R 336.1225
5. Alkylate Naphtha	8,300 barrels per day <sup>2</sup>	Based upon a monthly average	FGNAPHTHATANKS-S1	SC VI.3	R 336.1225
6. Ethanol	17,340 barrels per day <sup>2</sup>	Based upon a monthly average	FGNAPHTHATANKS-S1	SC VI.3	R 336.1225
7. Gasoline	95,000 barrels per day <sup>2</sup>	Based upon a monthly average	FGNAPHTHATANKS-S1	SC VI.3	R 336.1225
8. Coker Naptha	36,000 barrels per day	Based upon a monthly average	FGNAPHTHATANKS-S1	SC VI.3	R 336.1225

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

NA

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall equip and maintain EUTANK108-S1, EUTANK109-S1, EUTANK110-S1, and EUTANK128-S1 with slotted guidepole controls.<sup>2</sup> (R 336.1225, R 336.1702)

2. The permittee shall maintain each storage tank in FGNAPHTHATANKS-S1 with the following deck and seal configuration, or a deck and seal configuration that results in the same or lower VOC emissions from the tanks:<sup>2</sup> (R 336.1225, R 336.1702)

Equipment	Type	Deck	Primary Seal	Secondary Seal
EUTANK19-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK40-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK45-S1	Internal floating roof	Bolted	Vapor Mounted	Rim - Mounted
EUTANK46-S1	Internal floating roof	Bolted	Vapor Mounted	Rim - Mounted
EUTANK47-S1	Internal floating roof	Bolted	Vapor Mounted	Rim - Mounted
EUTANK48-S1	Internal floating roof	Bolted	Vapor Mounted	Rim - Mounted
EUTANK49-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK53-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK55-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK57-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK58-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK61-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK72-S1	Internal floating roof	Bolted	Vapor Mounted	Rim - Mounted
EUTANK101-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK108-S1	External floating roof	Welded	Mechanical Shoe	Rim - Mounted
EUTANK109-S1	External floating roof	Welded	Mechanical Shoe	Rim - Mounted
EUTANK110-S1	External floating roof	Welded	Mechanical Shoe	Rim - Mounted
EUTANK116-S1	Internal floating roof	Welded	Liquid Mounted	None
EUTANK118-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK128-S1	External floating roof	Welded	Mechanical Shoe	Rim - Mounted
EUTANK79-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK104-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK120-S1	Internal floating roof	Welded	Mechanical Shoe	None
EUTANK135-S1	Internal floating roof	Welded	Mechanical Shoe	None

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall perform inspections and monitor operating information for FGNAPHTHATANKS-S1 in accordance with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A & Kb. **(40 CFR Part 60 Subparts A & Kb)**
2. The permittee shall keep records of inspections and operating information for FGNAPHTHATANKS-S1 in accordance with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A & Kb. The permittee shall keep all records on file at the facility and shall make them available to the Department upon request. **(40 CFR Part 60 Subparts A & Kb)**
3. The permittee shall keep annual VOC emission calculations and monthly throughput records for FGNAPHTHATANKS-S1. The permittee shall keep all records on file at the facility and shall make them available to the Department upon request.<sup>2</sup> **(R336.1225, R336.1702)**

**VII. REPORTING**

NA

**See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Kb, as they apply to FGNAPHTHATANKS-S1. **(40 CFR 60 Subparts A & Kb)**

**Footnotes:**

<sup>1</sup> This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup> This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: FGCOOLTOWERS-S1**

**DESCRIPTION:** These requirements apply to the cooling towers that are new or being modified as part of the heavy oil upgrade project (HOUP): D, E, G, H, and the new cooling tower. These requirements also apply to existing cooling towers that are not being modified as part of the HOUP: A, C, and F.

**Emission Units:** EUCOOLTOWERA-S1, EUCOOLTOWERC-S1, EUCOOLTOWERD-S1, EUCOOLTOWERE-S1, EUCOOLTOWERF-S1, EUCOOLTOWERG-S1, EUCOOLTOWERH-S1, and EUCOOLTOWERNEW-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. Within 180 days after start-up of EU70-COKER-S1, the permittee shall submit, to the AQD District Supervisor, an inspection and maintenance program for each cooling tower in FGCOOLTOWERS-S1. The permittee shall comply with the submitted program until the AQD District Supervisor approves the program or approves an amended program. Thereafter, the permittee shall comply with the approved program. At any time, the permittee may submit a modified program to the AQD District Supervisor for review and approval. <sup>2</sup> (R 336.1205, R 336.2802, 40 CFR 52.21)
2. Within 180 days after start-up of EU70-COKER-S1, the permittee shall submit, to the AQD District Supervisor, a program for monitoring each cooling tower in FGCOOLTOWERS-S1 for leaks of process fluids into the cooling water. The submitted program shall include, as a minimum, all of the following:
  - a. A description of the parameter or condition to be monitored and an explanation of how the selected parameter or condition will reliably indicate the presence of a leak.
  - b. The parameter level(s) or conditions(s) that shall constitute a leak. This shall be documented by data or calculations showing that the selected levels or conditions will reliably identify leaks. The monitoring must be sufficiently sensitive to determine the range of parameter levels or conditions when the system is not leaking. When the selected parameter level or condition is outside that range, a leak is indicated.
  - c. The monitoring frequency which shall be no less frequent than monthly for the first 6 months and quarterly thereafter to detect leaks.
  - d. The records that will be maintained to document compliance with the requirements of this section.
  - e. If a leak is detected, the permittee shall comply with the following requirements:
    - i. The leak shall be repaired as soon as practical but not later than 45 calendar days after the permittee receives results of monitoring tests indicating a leak. The leak shall be repaired unless the permittee demonstrates that the results are due to a condition other than a leak. Once the leak has been repaired, the permittee shall confirm that the heat exchange system has been repaired within seven calendar days of the repair or startup, whichever is later.
    - ii. Delay of repair of heat exchange systems for which leaks have been detected is allowed if the equipment is isolated from the process. Delay of repair is also allowed if repair is technically infeasible without a shutdown and any one of the following conditions are met. All of the following time periods shall be determined from the date when the permittee determines that delay of repair is necessary.

1. If a shutdown is expected within the next 2 months, a special shutdown before that planned shutdown is not required. Documentation of a decision to delay repair shall state the reasons repair was delayed and shall specify a schedule for completing the repair as soon as practical.
2. If a shutdown for repair would cause greater emissions than the potential emissions from delaying repair, the permittee may delay repair until the next shutdown of the process equipment associated with the leaking heat exchanger. The permittee shall document the basis for the determination that a shutdown for repair would cause greater emissions than the emissions likely to result from delaying repair.
3. If a shutdown is not expected within the next 2 months, and the permittee delays repair because the necessary parts or personnel are not available, the permittee may delay repair up to a maximum of 120 calendar days. The permittee shall demonstrate that the necessary parts or personnel were not available.

The permittee shall comply with the submitted program until the AQD District Supervisor approves the program or approves an amended program. Thereafter, the permittee shall comply with the approved program. At any time, the permittee may submit a modified program to the AQD District Supervisor for review and approval. <sup>2</sup> (R 336.1205, R 336.2802, 40 CFR 52.21)

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall equip and maintain each cooling tower in FGCOOLTOWERS-S1 with drift eliminators with a vendor-certified maximum drift rate of 0.005 percent or less. (R 336.1205, R 336.2802, 40 CFR 52.21)

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Following issuance of this permit, but not later than 180 days after start-up of EU70-COKER-S1, and every seven years thereafter, the permittee shall determine drift loss from EUCOOLTOWERA-S1, EUCOOLTOWERC-S1, EUCOOLTOWERD-S1, EUCOOLTOWERE-S1, EUCOOLTOWERF-S1, EUCOOLTOWERG-S1, and EUCOOLTOWERH-S1 by testing, at owner's expense, in accordance with Department requirements. The permittee shall use the 1994 version of the Cooling Technology Institute's Acceptable Test Code (ATC) 140, unless the AQD approves use of an alternate method. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to start-up of EU70-COKER-S1, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Determination of drift loss includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. <sup>2</sup> (R 336.1205, R 336.2802, 40 CFR 52.21)
2. Within 180 days after start-up of EU70-COKER-S1, and every seven years thereafter, the permittee shall determine drift loss from EUCOOLTOWERNEW-S1 by testing, at owner's expense, in accordance with Department requirements. The permittee shall use the 1994 version of the Cooling Technology Institute's Acceptable Test Code (ATC) 140, unless the AQD approves use of an alternate method. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Determination of drift loss includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. <sup>2</sup> (R 336.1205, R 336.2802, 40 CFR 52.21)

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. For each cooling tower in FGCOOLTOWERS-S1, the permittee shall maintain a record, for the life of the cooling tower, of the vendor's certification required in SC IV.1. <sup>2</sup> (R 336.1205, R 336.2802, 40 CFR 52.21)

2. The permittee shall monitor the following for each cooling tower in FGCOOLTOWERS-S1.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21)**
  - a. On a weekly basis, parameters needed to determine the total dissolved solids content of the circulating water.
  - b. On a monthly basis, parameters needed to determine the water recirculation rate.
3. The permittee shall calculate the PM and PM-10 emission rates from each cooling tower in FGCOOLTOWERS-S1 monthly, for the preceding 12-month rolling time period, using a method acceptable to the AQD District Supervisor.<sup>2</sup> **(R 336.1205, R 336.2802, 40 CFR 52.21)**
4. The permittee shall keep, for each cooling tower in FGCOOLTOWERS-S1, a record of the date the two most recent drift loss determinations were conducted. This record shall be maintained for more than five years if necessary. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

## **VII. REPORTING**

1. If the permittee invokes the delay of repair provisions for a heat exchange system, the following information shall be submitted in the next semi-annual periodic report required by 40 CFR 63.152(c). If the leak remains unrepaired, the information shall also be submitted in each subsequent periodic report, until repair of the leak is reported. **(R 336.1205, R 336.2802, 40 CFR 52.21)**
  - a. The permittee shall report the presence of the leak and the date that the leak was detected.
  - b. The permittee shall report whether or not the leak has been repaired.
  - c. The permittee shall report the reason(s) for delay of repair. If delay of repair is invoked because a shutdown for repair would cause greater emissions than the potential emissions from delaying repair, documentation of emissions estimates must also be submitted.
  - d. If the leak remains unrepaired, the permittee shall report the expected date of repair.
  - e. If the leak is repaired, the permittee shall report the date the leak was successfully repaired.

## **VIII. STACK/VENT RESTRICTION(S)**

NA

## **IX. OTHER REQUIREMENT(S)**

NA

### **Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).



**The following conditions apply to: FGDHOUPANNUAL-S1**

**DESCRIPTION:** These emission units and flexible groups used the Actual-to-Potential test for PSD applicability. The emission limits in this group serve to limit the Potential to Emit of covered equipment.

**Emission Units:** EU11-FCCU-S1, EU14-CCRPLCATREG-S1, EU21-S2OFFGAS-S1, FG29-IGF-S1, EU42-43SULRECOV-S1, EU70-COKER-S1, EU-COKERFLARE-S1, EU72-SULRBLOCK2-S1, FG-HEATERS-S1, FG-PROCUNITS-S1, FGCOOLTOWERS-S1, FGHOUP TANKS-S1, EU71-H2STEAMSYS-S1, EU27-B&WBOILER1-S1, EU27-ZURNBOILER-S1

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. PM	122.2 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21
2. PM <sub>10</sub>	206.6 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21
3. NO <sub>x</sub>	642 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21
4. SO <sub>2</sub>	371 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21
5. CO	251.5 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21
6. VOC	462 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21
7. H <sub>2</sub> SO <sub>4</sub>	22.76 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21
8. H <sub>2</sub> S	8.44 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21
9. Total reduced sulfur (TRS)	9.73 tpy	Rolling 12-month time period	*FGDHOUPANNUAL-S1	SC VI.1	R 336.1205, R 336.2802, 40 CFR 52.21

\* Rolling 12-month time period as determined at the end of each calendar month.

Limits on the units and processes put in place in this permit for the operation of the facility will not cause a combination of increases or decreases that would violate the netting conclusion.

**II. MATERIAL LIMIT(S)**

NA

### **III. PROCESS/OPERATIONAL RESTRICTION(S)**

NA

### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall calculate the PM, PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>2</sub>, CO, VOC, H<sub>2</sub>SO<sub>4</sub>, H<sub>2</sub>S, and TRS emission rates from FGDHOUPANNUAL-S1 monthly, for the preceding 12-month rolling time period, using a method acceptable to the AQD District Supervisor, considering the following. (R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR Part 51 Appendix S)
  - a. For storage tanks, the permittee may maintain VOC, H<sub>2</sub>S, and TRS emission calculations and monthly throughput records in lieu of performing monthly VOC, H<sub>2</sub>S, and TRS calculations.
  - b. CO emissions during periods of startup, shutdown, and malfunction for each emission unit in FG-HEATERS-S1 without a CO CEMS shall be calculated at 400 ppmv at 3 percent excess oxygen. For each emission unit in FG-HEATERS-S1 without a CO CEMS, for which the permittee has collected CO emissions data during startup, shutdown and malfunction periods from representative process heaters, the permittee may, after submitting a demonstration to the AQD District Supervisor that the emission data is representative, use the representative process heater data for calculating the CO emission rate from that emission unit.
  - c. VOC, H<sub>2</sub>S, and TRS emissions from cooling towers shall be calculated for periods of leaks of process fluids into the cooling water.
  - d. H<sub>2</sub>S and TRS emissions from EU72-SULRBLOCK2-S1 shall include the emissions resulting from non-operation of the sulfur pit degassing system.
  - e. Fugitive emissions from all components that may leak, such as those addressed in leak detection and repair programs.
  - f. H<sub>2</sub>S and TRS emissions from sulfur recovery and loading operations.
  - g. All emission calculations shall include emissions from startups, shutdowns, and malfunctions.
  - h. The data obtained from the sulfur content sampling program for various sulfur laden products and process streams.
  - i. Emissions resulting from the steam to hydrocarbon ration not being maintained at the appropriate level for each flare.

### **VII. REPORTING**

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the date of completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than 180 days after the start-up of EU70-COKER-S1. (R 336.1216(1), R 336.1201(7)(a))

### **VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

1. NA

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: FGMACTDDDDD-S1**

**DESCRIPTION:** All boilers and process heaters at the Detroit Refinery are regulated under the standards in 40 CFR Part 63 Subpart DDDDD National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters.

**Emission Units:** All boilers and process heaters at the Detroit Refinery

**POLLUTION CONTROL EQUIPMENT:** NA

**I. EMISSION LIMITS**

NA

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall conduct a tune-up of each boiler and process heater beginning January 31, 2016, annually, biennially, or once every five years, depending on its size, as specified in 40 CFR 63.7540. **(40 CFR 63.7500)**
  - a. Annually (within 13 months) for each boiler or process heater greater than or equal to 10 MMBTU/hr.
  - b. Biennially (within 25 months) for each boiler or process heater greater than 5 MMBTU/hr and less than 10 MMBTU/hr.
  - c. Every five years (within 61 months) for each boiler or process heater less than or equal to 5 MMBTU/hr.
2. The permittee must have a one-time energy assessment performed by a qualified energy assessor for each boiler and process heater as required in Table 3 of 40 CFR Part 63 Subpart DDDDD. **(40 CFR 63.7500)**
3. At all times, you must operate and maintain any affected source (as defined in § 63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. **(40 CFR 63.7500)**

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

**VII. REPORTING**

1. The permittee shall submit reports for each boiler or process heater as required by 40 CFR 63.7550. **(40 CFR Part 63 Subpart DDDDD)**

**VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

1. The permittee shall comply with all provisions of the federal National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters as specified in 40 CFR Part 63 Subparts A and DDDDD, as they apply to each boiler and process heater at the Detroit Refinery. **(40 CFR 63 Subparts A & DDDDD)**

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**The following conditions apply to: Source-Wide Conditions**

**I. EMISSION LIMIT(S)**

NA

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall not operate any non-continuous drain for more than 100 hours per 12-month rolling time period, as determined at the end of each calendar month. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

**See Appendix 5-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall conduct an enhanced air monitoring program at the facility to address citizen concerns. The permittee shall monitor concentrations of carbon monoxide, PM-10, sulfur dioxide, volatile organic compounds (TO-15 canister method – subset to be determined and approved in the enhanced air monitoring program), and total reduced sulfur at no less than four sites in a manner and with instrumentation approved by the AQD Air Monitoring Unit. No less than 180 days after beginning construction pursuant to Permit to Install No. 63-08, the permittee shall submit a monitoring plan for the enhanced air monitoring program to the AQD Air Monitoring Unit. Following approval of a plan, the permittee shall begin monitoring all required pollutants, according to the approved plan, no later than the date of startup of the heavy oil upgrade project. Monitoring shall continue for at least ten years.<sup>3</sup> **(R 336.1901)**
2. The permittee shall keep records of all air monitoring data collected in the air monitoring program. The permittee shall submit all records to the AQD Air Monitoring Unit in an acceptable format within 45 days following the end of the quarter in which the data were collected.<sup>3</sup> **(R 336.1901)**
3. The permittee shall keep monthly and 12-month rolling time period records of the hours of operation of each non-continuous drain. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

**VII. REPORTING**

NA

**See Appendix 8-S1 of Renewable Operating Permit MI-ROP-A9831-2012a**

**VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

1. The conditions contained in this RO Permit for which a Consent Decree is the only identified applicable requirement shall be considered null and void upon the effective date of termination of the Consent Decree. The effective date of termination is defined for the purposes of this condition as the date upon which the Stipulation and Order for Termination is signed by a Circuit Court Judge. **(R 336.1213(3))**
2. Permittee shall comply with the requirements of the Consent Decree No. 01-40119 between United States of America (Plaintiff) and County of Wayne, Michigan, State of Louisiana, State of Minnesota (Plaintiff-Interveners) v. Marathon Ashland Petroleum LLC (Defendant) and revisions thereto. **(R 336.1213(3))**
3. Each Responsible Official shall certify annually, using the format in Appendix 8, that the stationary source is in compliance with all stationary source-wide requirements. This certification shall be included as part of the annual certification of compliance as required in General Conditions 28 and 29 in Part A of the RO Permit. **(R 336.1213(4)(c))**
4. Permittee shall comply with the Fugitive Dust Control Program dated December 27, 1996 and revisions thereto. **(R 336.1213(3))**
5. Permittee shall comply with all applicable requirements of 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart A-General Provisions. **(40 CFR 63, Subpart A)**
6. Permittee shall comply with all applicable requirements of 40 CFR Part 63, Subpart CC-National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries. **(40 CFR 63, Subpart CC)**
7. Permittee shall comply with all applicable requirements of 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart A-General Provisions. **(40 CFR 61, Subpart A)**
8. Permittee shall comply with all applicable requirements of 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart M-National Emission Standard for Asbestos. **(40 CFR 61, Subpart M)**
9. Permittee shall comply with all applicable requirements of 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart FF-National Emission Standard for Benzene Waste Operations. **(Paragraph 18 and 19 of Consent Decree No. 01-40119, 40 CFR 61, Subpart FF, Consent Decree No. 01-40119)**
10. Permittee shall comply with all applicable requirements of Natural Resources and Environmental Protection Act, Act 451 of 1994, Subpart 324.5524. **(Act 451, Part 55, 324.5524)**
11. Permittee shall not cause or allow the emission of any volatile organic compound from any process unit turnaround at the facility, unless such emission is controlled by one of the following methods:
  - a. Capture and disposal in a fuel gas system
  - b. Combustion in a smokeless flare
  - c. Any method approved by the Division that recovers no less than 90%, by weight, of the uncontrolled volatile organic compounds that would otherwise be emitted into the atmosphere **(R 336.1616(1)(a, b & c))**

12. Permittee shall comply with the provisions of R336.1616 until the pressure of all vessels in the system is less than 5 psi gauge. **(R 336.1616(2))**
13. Except as provided for in SC IX.14, the permittee shall notify the Division not less than 30 days before any process unit turnaround subject to the provisions of R336.1616. **(R 336.1616(3))**
14. In the case of process unit turnarounds caused by circumstances beyond the control of the permittee, the Division shall be notified as soon as reasonably possible. **(R 336.1616(4)), (R 336.1213)(3)**

**Note:** Process Unit Turnarounds, for this ROP, are defined as “planned and scheduled shutdowns in which the entire process unit is shutdown and deinventoried for major maintenance activities”.

15. Permittee shall comply with all applicable requirements of 40 CFR Part 63, Subpart UUU-National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units. **(40 CFR 63, Subpart UUU)**
16. The provisions of Rule 406(2) are applicable requirements for the permittee. **(R 336.1406(2))**
17. The permittee shall conduct a program of enhanced sweeping of paved roads in the vicinity of the Detroit refinery. No less than 180 days after beginning construction pursuant to Permit to Install No. 63-08, the permittee shall submit a plan for the enhanced street sweeping program to the AQD District Supervisor as a proposed revision to the Fugitive Dust Control Program required in B-S1, Source Wide Conditions, of Renewable Operating Permit MI-ROP-A9831-2012a. The plan shall include the location, frequency, and estimated PM and PM-10 benefits of the program. The permittee shall begin enhanced sweeping, according to the plan, no later than the date of startup of the heavy oil upgrade project. At any time, the permittee may submit a modified plan to the AQD District Supervisor. **(R 336.1901)**
18. The permittee shall notify the Department if a change in land use occurs for property classified as industrial or as a public roadway, where this classification was relied upon to demonstrate compliance with Rule 225(1) for the heavy oil upgrade project. The permittee shall submit the notification to the AQD District Supervisor within 30 days of the actual land use change. Within 60 days of the land use change, the permittee shall submit to the AQD District Supervisor a plan for complying with the requirements of Rule 225(1). The plan shall require compliance with Rule 225(1) no later than one year after the due date of the plan submittal. **(R 336.1225(4))**
19. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Ja, as they apply to the facility. **(40 CFR Part 60 Subparts A & Ja)**
20. No later than startup of EU70-COKER-S1, as defined in R 336.1119(p), the permittee shall permanently cease operating DHT compressors 1, 2, and 3, FCCU compressor 6, EU17-BTPLCHARHTR, EU17-BTPLINTRHTR, EU17-BTPLATFORMR, and EU07-DHTCHARHTR, and shall control emissions from 29 pressure relief valves to atmosphere in the LPG Tank Farm. **(R 336.1205, R 336.2802, 40 CFR 52.21)**



21. Within 180 days after commencement of trial operation, the permittee shall submit to the AQD a sulfur content sampling plan for sulfur-laden process streams and products for the process units and products listed below. The plan shall consider catalyst life ("start of run" and "end of run" conditions) for the affected process units and products. The purpose of this sampling plan is to verify the sulfur distributions in the process simulations relied on in the permit application. **(R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**
- Crude unit
  - Vacuum unit
  - Coker and coker gas plant
  - Naphtha hydrotreater
  - Distillate hydrotreater
  - Kerosene hydrotreater
  - Gasoil hydrotreater
  - Sulfur recovery units, including sulfur storage tanks and rail car loading operations
  - Asphalt produced
22. Within 180 days after commencement of trial operation, the permittee shall submit to the AQD a sulfur content sampling plan for sulfur-laden process streams, products, sour water streams, and sulfur laden gaseous streams for the process units and products listed below. The plan shall consider catalyst life ("start of run" and "end of run" conditions) for the affected process units and products. Sampling under the plan must occur at least annually. The purpose of this sampling plan is to verify the sulfur distributions in the process simulations relied on in the permit application.<sup>3</sup> **(R 336.1201(3))**
- Crude unit
  - Vacuum unit
  - Coker and coker gas plant
  - Naphtha hydrotreater
  - Distillate hydrotreater
  - Kerosene hydrotreater
  - Gasoil hydrotreater
  - Sulfur recovery units, including tail gas units, sulfur storage tanks and rail car loading operations
  - Asphalt produced
23. The installation and modification of all emissions units designated as part of the DHOUP, and all projects resulting in emissions decreases necessary to ensure that this project is minor under the New Source Review regulations, shall be completed no later than 180 days from the start-up of EU70-COKER-S1. This shall be considered the completion of DHOUP construction, and the end of the contemporaneous period for this project. **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR Part 51 Appendix S)**

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

<sup>3</sup>This condition is included at the request of the permittee.

**APPENDIX A**  
**NO<sub>x</sub>, SO<sub>2</sub>, O<sub>2</sub> and CO Monitoring**  
**Continuous Emission Monitoring System (CEMS) Requirements**

1. Within 30 calendar days after commencement of trial operation, the permittee shall submit two copies of a Monitoring Plan to the AQD, for review and approval. The Monitoring Plan shall include drawings or specifications showing proposed locations and descriptions of the required CEMS.
2. Within 150 calendar days after commencement of trial operation, the permittee shall submit two copies of a complete test plan for the CEMS to the AQD for approval.
3. Within 180 calendar days after commencement of trial operation, the permittee shall complete the installation and testing of the CEMS.
4. Within 60 days of completion of testing, the permittee shall submit to the AQD two copies of the final report demonstrating the CEMS complies with the requirements of the corresponding Performance Specifications (PS) in the following table.

Pollutant	Applicable PS
NO <sub>x</sub>	2
SO <sub>2</sub>	2
O <sub>2</sub>	3
CO	4

5. The span value shall be 2.0 times the lowest emission standard or as specified in the federal regulations.
6. The CEMS shall be installed, calibrated, maintained, and operated in accordance with the procedures set forth in 40 CFR 60.13 and PS 2 of Appendix B to 40 CFR Part 60.
7. Each calendar quarter, the permittee shall perform the Quality Assurance Procedures of the CEMS set forth in Appendix F of 40 CFR Part 60. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report (Figure 1, Appendix F).
8. In accordance with 40 CFR 60.7(c) and (d), the permittee shall submit two copies of an excess emission report (EER) and summary report in an acceptable format to the AQD, within 30 days following the end of each calendar quarter. The Summary Report shall follow the format of Figure 1 in 40 CFR 60.7(d). The EER shall include the following information:
  - a) A report of each exceedance above the limits specified in the conditions of this permit. This includes the date, time, magnitude, cause and corrective actions of all occurrences during the reporting period.
  - b) A report of all periods of CEMS downtime and corrective action.
  - c) A report of the total operating time of the emission unit during the reporting period.
  - d) A report of any periods that the CEMS exceeds the instrument range.
  - e) If no exceedances or CEMS downtime occurred during the reporting period, the permittee shall report that fact.

The permittee shall keep all monitoring data on file for a period of at least five years and make them available to the AQD upon request.

## APPENDIX B

### Recordkeeping Provisions – Actual to Projected-Actual Applicability Test

All information in this Appendix shall be maintained pursuant to R 336.2818 and 40 CFR 52.21(r)(6)(i) for 10 years after the emission units identified in Table C resume normal operations, and shall be made available to the Department upon request.

#### A. Project Description:

The Detroit Heavy Oil Upgrade Project (Detroit HOUP) will expand the capacity of the Detroit Refinery and install new process units and support equipment to allow the facility to refine a new source of crude oil. The proposed changes include the installation of a new delayed coker and coker gas plant, a new hydrogen plant and a second sulfur recovery unit, a replacement distillate hydrotreater, new storage tanks, a new flare system, a new cooling tower and changes to many of the existing process units at the refinery.

These changes are described in Permit to Install application number 63-08.

#### B. Applicability Test Description:

For all new emission units, the increase in actual emissions from the Detroit HOUP is based on the actual-to-potential test. For most existing emission units included in the Detroit HOUP, the potential to emit is based on requested maximum allowable emission rates as opposed to the maximum design capacity of the units, and the actual emissions increase due to the Detroit HOUP for those emission units was also based on the actual-to-potential calculation. The only exception to the use of the actual-to-potential test is for the existing flare systems, included in FGREFINEFLARES-S1 in the permit.

#### C. Emission Units Using Actual-to-Projected Actual Test:

Emission Unit/Flexible Group ID	Pollutant	Emissions (tpy)			Reason for Exclusion
		Baseline Actual	Projected Actual	Excluded	
FGREFINEFLARES-S1	NO <sub>x</sub>	3.1	2.9	-	
	SO <sub>2</sub>	23.2	3.3	-	
	VOC	13.5	6.9	-	
	CO	13.5	14	-	
	PM	0.08	0.08	-	
	PM <sub>10</sub>	0.31	0.31	-	
	H <sub>2</sub> SO <sub>4</sub>	1.87	0.26	-	
	H <sub>2</sub> S	3.1	0.03		
	TRS	3.4	0.03		

#### D. Emission Units Using Potential to Emit:

Emission estimates for the Detroit HOUP have used Potential to Emit for the following emission units/flexible groups:

EU11-FCCU-S1 FG29-IGF-S1 EU72-SULRBLOCK2-S1 FG-PROCUNITS-S1	EU14-CCRPLCATREG-S1 EU42-43SULRECOV-S1 EU-COKERFLARE-S1 FGCOOLTOWERS-S1	EU21-S2OFFGAS-S1 EU70-COKER-S1 FG-HEATERS-S1 FGHOUP TANKS-S1
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The flexible group FGDHOUPANNUAL-S1 has been created to account for the emissions from this group of equipment.

E. Netting Calculations and Discussion:

Emissions changes from the Detroit HOUP are summarized below. The Detroit HOUP emissions include the projected actual emissions from the existing refinery flares. In cases where the project emissions exceed their regulatory significance threshold, a netting analysis was conducted whereby the sum of the contemporaneous emission increases and decreases were combined with the Detroit HOUP emissions to determine the net emissions impact. Emission decreases associated with a federal Consent Decree are not creditable in determining the net emissions impact and have been excluded from the calculation.

**Detroit HOUP Net Emissions Changes (tons per year)**

	VOC	NOx	SO <sub>2</sub>	PM	PM10	CO	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> S	TRS
Detroit HOUP	-38	198	208	33	-14	85	12	3	3
Contemporaneous Increases	54	91	8	10	18	0	1	-	-
Contemporaneous Decreases	20	290	219	43	18	0	18	-	-
Total	-5	-1	-3	0	-14	85	-5	3	3
Significance Level	40	40	40	25	15	100	7	10	10

F. Pre-Construction Projection of Emissions:

The following table shows the pre-construction estimate of emissions from the Detroit HOUP. The table identifies the projected annual emission rate for emission units using the actual-to-projected actual test, and the potential emission rate for emission units using the actual-to-potential test.

**Detroit HOUP Pre-Construction Emissions Projection (tons per year)**

	VOC	NOx	SO <sub>2</sub>	PM	PM10	CO	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> S	TRS
Projected emissions for units using actual-to-projected actual test (FGREFINEFLARES-S1)	7	3	3	0.1	0.3	14	0.26	0.03	0.03
Potential to emit for units using actual-to-potential test (FGDHOUPANNUAL-S1)	462	642	371	122.2	206.6	251.5	22.76	8.44	9.73
Detroit HOUP Total Projected Emissions	469	645	374	122.3	206.9	268	23.02	8.47	9.76

G. Recordkeeping:

The annual records shall contain the following information and be presented in a format acceptable to the AQD Permit Section Supervisor:

Pre-construction projection of actual emissions for emission units using the actual-to-projected actual test (FGREFINEFLARES-S1).

Calendar year actual emissions for emission units using the actual-to-projected actual test (FGREFINEFLARES-S1).

Potential-to-emit for emission units using the actual-to-potential test (FGDHOU PANNUAL-S1).

**Detroit HOU P Annual Emissions Record (tons per year)**

	VOC	NOx	SO <sub>2</sub>	PM	PM10	CO	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> S	TRS
Projected emissions for units using actual-to-projected actual test (FGREFINEFLARES-S1)	7	3	3	0.1	0.3	14	0.26	0.03	0.03
Potential to emit for units using actual-to-potential test (FGDHOU PANNUAL-S1)	462	642	371	122.2	206.6	251.5	22.769	8.44	9.73
Detroit HOU P Pre-construction Projection	469	645	374	122.3	206.9	268	23.02	8.47	9.76
Actual emissions for units using actual-to-projected actual test (FGREFINEFLARES-S1)									
Potential to emit for units using actual-to-potential test (FGDHOU PANNUAL-S1)	462	642	371	122.2	206.6	251.5	22.76	8.44	9.73
Detroit HOU P Annual Emissions for Calendar Year <sup>(1)</sup>									

(1) Sum of actual emissions for units using actual-to-projected actual test (FGREFINEFLARES-S1) plus potential to emit for units using actual-to-potential test (FGDHOU PANNUAL-S1).

H. Netting Summary:

The net emissions for DHOUP shall be summarized based on the calendar year actual emissions for all emission units associated with the project.

**Detroit HOUP Emission Netting Summary (tons per year)**

	VOC	NOx	SO <sub>2</sub>	PM	PM10	CO	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> S	TRS
Actual emissions for units using actual-to-projected actual test (FGREFINEFLARES-S1)									
Actual emissions for units using actual-to-potential test (FGDHOUPANNUAL-S1)									
Detroit HOUP Actual Emissions for Calendar Year <sup>(1)</sup>									
Detroit HOUP Baseline Emissions	441	357	178	81	202.3	183	12.04	8.84	10.01
DHOUP Actual Emissions minus Baseline Emissions <sup>(2)</sup>									
Contemporaneous Emission Increases <sup>(3), (4)</sup>	26	0	0	0	0	0	0	-	-
Contemporaneous/Creditable Emission Decreases <sup>(4), (5)</sup>	-66	-290	-219	-43	-18	0	-18	-	-
Other Contemporaneous Increases/Decreases <sup>(6)</sup>	0.13								
Net DHOUP Actual Emissions Increase (Add four lines above)									
PSD Significance Level	40	40	40	25	15	100	7	10	10

(1) Sum of actual emissions for units using actual-to-projected actual test (FGREFINEFLARES-S1) plus actual emissions for units using actual-to-potential test (FGDHOUPANNUAL-S1)

(2) Includes emission increases for several projects in contemporaneous period.

(3) Excludes contemporaneous increases embedded in the line item for DHOUP Actual Emissions, including the 2005 expansion (see footnote 2).

(4) Netting analysis was not required for hydrogen sulfide or total reduced sulfur compounds.

(5) The creditable decreases for VOC include 46 tons per year due to controlling emissions from 29 pressure relief valves to atmosphere in the LPG Tank Farm that are included in the "Detroit HOUP" line in the table in section E above.

(6) Other emissions increases and decreases occurring during the contemporaneous period (after issuance of the Permit to Install for the DHOUP but before startup of the DHOUP). This includes PTI 96-11.